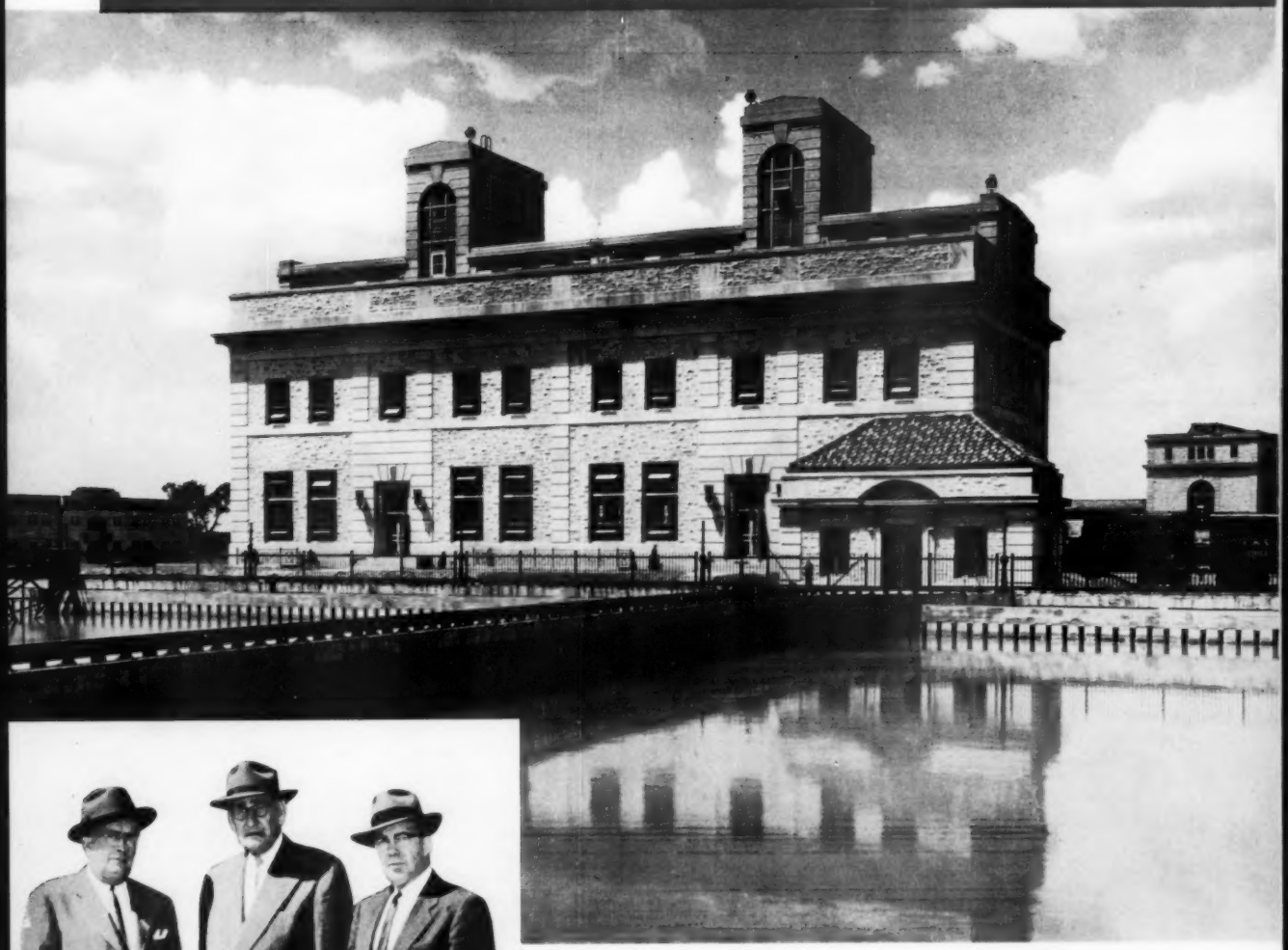
The American City

MAY 1956



St. Louis, Missouri, **birthplace of the American Water Works Association, again plays host to this organization on its 75th anniversary of its founding. Mayor Raymond R. Tucker, right (see inset) will be on hand with Utilities Director C. B. Briscoe, left, and Water Commissioner Thomas J. Skinker, center. The building shown is the coagulant house at the city's big Howard Bend filtration plant.**

See AWWA story on page 105.

Williamsburg spreads "welcome mat" *for visiting motorists*

Carpeting one of the chief access roads to colonial Williamsburg, Va., with a two-inch compacted thickness of durable, skid-resistant Texaco Sand-Asphalt.

CONTRACTOR
Virginia Engineering Co., Inc.
Newport News, Va.

ENGINEERING · RESEARCH · EDUCATION
THE ASPHALT INSTITUTE
MEMBER

Williamsburg, Va., as the result of painstaking restoration, looks today as it did during America's colonial period. Hundreds of thousands of motorists visit this historically interesting community every year.

The "welcome mat" being spread for these motorists on one of the main roads into Williamsburg, as shown by the photograph, consists of a plant-mixed Texaco Sand-Asphalt surface. In areas where suitable sand is available locally at low cost, Texaco Sand-Asphalt provides cities with an economical pavement adequate for all streets, including those which serve heavy traffic.

More than 1500 U. S. cities and towns have been finding the answers to their varied paving problems in Texaco Asphalt products for more than half a century. These Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils are used in the construction of heavy-duty, intermediate and low-cost types of streets.

Helpful information for municipal officials on the methods and materials recommended for all of these Asphalt street improvements is supplied in two free Texaco booklets. Copies may be secured without obligation by writing or calling our nearest office.

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17
Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Minneapolis 3 Philadelphia 2 Richmond 19

TEXACO
REG. T. M.

TEXACO ASPHALT

MAY 1956

The American City

Contents

Administration and Government

New Head of Public Administration Society **23**
Midland, Texas, Publishes Monthly News Report **122**
Municipal Public Relations — City Tells Its Story **137**
The Keeper of the Minutes **183**
Colored Slides Give Life to Annual Report **201**
Recent City Manager Appointments **209**

Finance and Taxation and Business Machines and Systems

Pointers from Accounting Control at Chicago Park District **116**
Defining Work Units for Performance Budgets **191**
Award for Local Assessment Achievements **233**

Street Construction and Maintenance And Street Cleaning

One Street Sweeper Serves 4,000 People **10**
Big Basket Sparks Drive for New York Cleanup **10**
Hayward Switches to Fast-Traveling Sweepers **10**
Federal Highway Bill Looks Good for Cities **15**
Less Costly Heavy-Duty Asphalt **15**
A One-Man Street Cleaning Crew **104**
It Also Loads Leaves **109**
No Base Failures — Better Stability **121**

Lighting

Ability to See Under Roadway Lighting Systems **142**
Making Old Concrete Posts Go On Working **145**
Relighting Kansas City, Missouri — Part III **149**
First Luminaires Leave Hendersonville **153**
Pittsburgh's New Gateway to the Sky **153**
"Silver" and "Gold" Mercury Vapor Lamps **154**
Better Lighted Boonton, N. J. **154**

Sewerage and Sewage Treatment

Federal Funds Proposed for Sewage Treatment **7**
Fabulous Disneyland, Practical Sewers **12**
Los Angeles to Alter Its Sewage Treatment **12**
Sewerage Enabling Acts in Digest Form **12**
Untemperamental Activated Sludge **106**
Single-Stage Today, Two-Stage Tomorrow **132**
Record Drive-Chain Order for Los Angeles Sewage Plant **200**

Power and Gas

We Both Needed Natural Gas **178**
City and Village Buy Electricity Generated by Atomic Reactor **195**

Public Safety

Philadelphia First in Fire Prevention **237**
Smithtown's New Fire House **237**

Purchasing

Buy Better Uniforms Faster with Specifications **123**
Purchasing News **239**

Traffic Control

Citizens Put Over Kearny Parking Survey **130**
Fringe Parking with a Purpose **157**
Proper Fringe Parking Works **157**
Fringe Parking in Miami **157**
Deaths 2:1 on Wet Pavements **158**
Transporting More People **158**
Extensive City Transportation **161**
Prompt Look at Accidents **161**
Valley Stream's Many Parking Areas **161**
More Off-Street Space in Business District **165**
Pedestrians Crossing Columbus Circle **165**
Thoughts on Mass Transit **165**
Plain Talk on City Transportation **180**

Water Supply and Treatment

Atlanta's 10,000th Hydrant Chrome Plated **9**
How Cincinnati Bills for Water Services **9**
Small Trencher Wins Friends for Nickerson **9**
Winston-Salem Adopts Automatic pH Control **101**
AWWA Celebrates 75th Anniversary **105**
Tapping Prestressed Concrete Cylinder Pipe Under Pressure **110**
Trouble-Free Service in Super Corrosive Soil **118**
We Microwave Our Water Data **126**
A Do-Part-Yourself Program **175**
Irrigation — A Threat to Water Supply? **229**

Planning, Zoning, and Housing

Are Your Public Buildings Slums? **27**
Other Professions Described as Bases for City Planning **27**
Correspondence Course in Local Planning Administration **189**
How Zoning Came to American Cities **196**

Urban Renewal and Redevelopment

Federal Urban Renewal Procedures Being Reappraised **23**
Section 221 Goes to Work **119**

Refuse Collection and Disposal

Oakland Parks Use Cardboard Trash Containers **27**
Big Containers, Better Collection **114**
Incinerators Win in New Orleans **129**
The Sanitary Landfill — Part III (Conclusion) **134**

Parks and Recreation

Municipal Marina Rings Up $22,000 **19**
National Recreation Month **21**
Sports Center for Brooklyn **24**
Berkeley Develops a "New Look" Playground **125**

Pest Control

War on Flies **113**

Air Pollution

Smog Research Increases **27**
No More Smoke Exhaust in Philadelphia **166**
L. A. Smog Gets Radio-Alert **199**

Miscellaneous

Employee Conferences Pay Dividends **24**
Japan Sends Cherry Tree Seeds to Further Understanding **24**
New Port Facilities for Miami **24**
Curfew Alone Not Enough to Curb Delinquency **108**
Lesson Learned from Recent California Floods **115**
Municipal Engineer Honored in Miami **120**
A Park Department Trencher **124**
Power Saws Earn $39,000 **128**
Jet Runway Vacuum Cleaner **129**
Salisbury, N. C., Gets Aerial Survey **170**
Progress Comes to Pearisburg, Va. **187**
Modesto Wants Name for "Young Solid Citizens" **189**
NY State CD Enlists Radio "Hams" **195**
Construction Contracts Zooming **199**
Flood and Disaster Aid Programs Advance in Congress **231**

Departments

Mail Bag (Letters to the Editor) **5, 7**
Manufacturers' Catalogs **28**
Zoning Notes **202, 205**
Legal Notes **207**
Bond Market **209**
Conventions **211**
Municipal and Civic Publications **212**
About People **285**

Index to Advertisers 300-301

Telephone Man Helps Save Five from Tidal Waters

Quick action prevents tragedy when family is marooned in hurricane

AWARDED MEDAL—Robert A. Gillespie, of Block Island, R. I., was awarded the Vail Medal for "courage, endurance and ingenuity" in helping to rescue five people marooned by tidal waters. Vail Medals, accompanied by cash awards, are given annually by the Bell System for acts of noteworthy public service by telephone employees.

Hurricane winds of 110 miles an hour were creating a tidal wave when the telephone operator at Block Island, Rhode Island, received a call for help from a family marooned in a cottage.

"I was in the telephone office," says installer repairman Robert A. Gillespie, "when I heard of the call. I'd been through hurricanes before and I knew they might be in real trouble."

Quickly enlisting the aid of two men who were outside the telephone building, he drove his company truck to within 400 feet of the isolated cottage, as near as the high water would allow.

RESCUE AT HAND. Telephone man fights his way through swirling waters to bring marooned cottagers to safety during hurricane.

"We could see that three poles led toward the cottage," says Bob Gillespie, "so we took handlines and a rope from the truck. We secured one end of the line to the first pole and waded to the second pole. There we tied up our line and kept wading to the third pole."

But they were still thirty feet away from the marooned family when they got as far as the rope would go—thirty feet of dangerous, rushing water.

Bob Gillespie's companions safeguarded the ropes while he fought his way alone to the cottage.

He made three trips through the rising tidal waters. First he carried a small boy to the comparative safety of the forward end of the rope.

Then, with considerable difficulty, assisted two women; and a man and another boy. And finally, though almost exhausted, he guided the entire group along the all-important rope lifeline that led to high ground and safety.

HELPING HANDS—*The spirit of service of telephone men and women is shown not only in the dramatic situations of fire and flood and storm, but in the everyday affairs of life. Thousands of times every day, and through the long hours of the night, the telephone and telephone people help those who are ill or in trouble or confronted by some occasion that needs a skilled and willing hand. Just having the telephone close by gives a feeling of security and of being close to people.*

BELL TELEPHONE SYSTEM

Call to Cities with Storm Drainage Problem

We here in Englewood, are seeking solutions to a problem with which we find our city confronted. Aware of your reputation as a key information center we hope that you may be able to tell us how other cities of our size (26,000) have licked similar problems.

Storm drainage has become a serious problem here because of our rapid commercial and residential expansion. In 1955 a consulting engineering firm analyzed the situation and submitted a technical report stating what must be done to solve the problem. Estimated costs range from $1.5 to $3 million, depending on the amount of the recommended work we are able to undertake.

Basically, our problem is how to organize the necessary districts in an equitable manner in order to produce the needed revenue, and to present the plan in such a way that the citizens will "buy" it.

Somewhat less than half of the city's landowners actually become "washed out" when the heavy spring rains strike, and these citizens are very seriously stricken. But the tax burden necessary to provide even the most basic storm drainage construction would be prohibitive ($1,500,000) if only the affected landowners had to pay the way.

We doubt very seriously if a city-wide division of districts or a single district would pass a bond election, since persons who own property that is not now endangered by heavy rain drainage probably would vote against increasing their own tax burden to aid landowners in the critical areas.

We would indeed be grateful for some examples of how this sort of problem has been solved in other cities, or even for the address of cities who have had similar problems so they might tell us first hand of their experiences.

JOE M. LACY
Administrative Assistant
P. O. Box 178, Englewood, Colo.

Review of Planning Report Brings Many Requests

You may be interested in knowing about the many requests that I have received for a report of mine that THE AMERICAN CITY reviewed briefly on page 168 of the January 1956 issue. The report, titled "Report of Committee on Zoning and Planning," covered recent significant trends in these fields, and it was submitted to the National Institute of Municipal Law Officers at their annual convention in November 1955.

When one of your staff called my office to ask if I had copies available for distribution (since a brief review was planned for your January issue), I was pleased to know that the report was so highly regarded. I am now amazed to see that the over 300 copies of the report that I originally had are completely gone. Requests from all over the United States were received. In addition, requests from Canada and Mexico came in, which just indicates to me the widespread interest in this subject. I was very pleased to be able to make these copies available.

FRED G. STICKEL, III
Counsel, Roseland, N. J.

Detergent Problem Arouses Interest

Let me hasten to commend you for your frank, factual and informative article, "Detergents—Not Necessarily Guilty" (March 1956, pp. 120-21). We have been following your editorial discussion of this annoying subject in sewage treatment practice over several years. Our files disclose your article in the September 1951 issue, "The Problem of Detergents in Sanitary Engineering"; we are impressed to read your prophecy that the problem would be solved by the engineer. Apparently, it is now

THE AMERICAN CITY

Harold S. Buttenheim, Editor Emeritus • **William S. Foster,** Editor • **Alden W. Welch,** Research Editor
Elroy F. Spitzer, Engineering Editor • **Douglas S. Powell,** Associate Editor • **William T. Dulac,** Production Editor
Jeannette Trotta, New Products Editor • **Sheila C. Malton,** Assistant Editor

Editorial and Executive Offices:
470 Fourth Avenue, New York 16, New York • MUrray Hill 5-9252

Edgar J. Buttenheim, President • **George S. Conover,** Vice-President
Edwin Wagner, Treasurer • **Edgar M. Buttenheim,** General Manager
Myron MacLeod, Advertising Manager • **Edward George Allen, Jr.,** Promotion Manager • **Don Daily**

Branch Offices:
Chicago 6 • 2111 Daily News Building • CEntral 6-2853
George S. Conover, Vice-President • **Warner H. Robinson** • **Arthur B. Burgan**
Cleveland 14 • 603 The Arcade • CHerry 1-1755 • Robert C. Burton
Curtis R. Buttenheim, Southern Sales Manager • **121 North Hermitage • Lookout Mountain 8, Tenn. TAylor 1-2853**
Los Angeles 27 • 2238 Ben Lomond Drive • NOrmandy 5-5143 • Albert T. Miller, Pacific Coast Manager

VOLUME 71, NUMBER 5

THE AMERICAN CITY is issued monthly by THE AMERICAN CITY MAGAZINE CORPORATION. Subscription rates: $4 in the U. S. and Canada; $7 in all other countries of the world. Single copies, 50 cents. Back copies, $1. Entered as second-class matter, July 20, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in the U. S. A. THE AMERICAN CITY is indexed regularly by Engineering Index, Inc., and the Readers Guide to Periodical Literature.

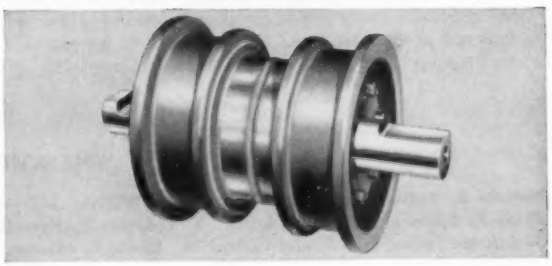
Do you believe one make of parts is as good as another?

Take track rollers. You can buy substitutes that look on the outside like Caterpillar originals. But a Cat-built track roller has deep hardened rims of forged steel. Forging keeps rims free from the accidental defects often found in castings. The roller shaft is one-piece and induction-hardened. The seals are self-aligning, of double-tanned leather to *really* keep lubricant in, water and dirt out. You're *sure* of extra wear, extra life —on the toughest jobs.

With substitute parts, can you be sure of anything?

See your dealer's Parts Representative—better get Caterpillar original parts every time.

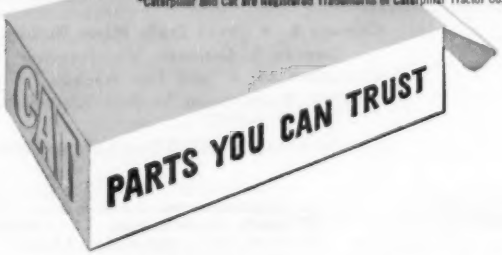
Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



Steel for CAT* rollers is pretested, forged in special Caterpillar owned dies, precision-machined, scientifically heat-treated and carefully inspected. Why settle for anything less?

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.



about to be realized, by virtue of the four research projects enumerated.

Foaming was encountered in activated sludge plants long before the advent of synthetic detergents, a fact which has apparently been too little appreciated in recent years. Your May 1950, issue featured an article entitled, "Detergents and Foaming in Sewage Treatment." The information was derived from an investigation of the problem here at Ridgewood. Repeated aeration tests on batches of "raw" sewage, established the foaming phenomenon as being related to biological oxidation, occurring near the end of the carbonaceous oxidation and before the onset of accelerated nitrogenous oxidation.

Progress reports on the current work undoubtedly will appear in your forthcoming issues. All of us are looking forward to the results of these studies.

JOHN W. HOOD
Superintendent of Sewage Treatment
Ridgewood, N. J.

March Redevelopment Article Submitted to Senate Committee

Reprints of Morris D. Smith's excellent article, "Surveying the Barriers to Local Redevelopment Progress" (See THE AMERICAN CITY for March, p. 154), were submitted to members of the Senate Committee on Banking and Currency on March 26 when Mr. Robert D. Sipprell, executive director of the Buffalo Municipal Housing Authority, and I testified on proposed federal housing legislation. We thought that you and your readers would like to know that we gave the reprints to the Committee members for the record.

JOHN R. SEARLES, JR.
Executive Director
District of Columbia
Redevelopment Land Agency

Study Unit to Be Prepared

In order to prepare a study unit on radio and television in my Freshman English courses, I am seeking a variety of background readings for use by my students.

The essay, "Broadcasting as a Community Enterprise," which appeared in THE AMERICAN CITY in December 1950, seems to be exactly what I am looking for in this particular area. Unfortunately, we have but one copy of the magazine in our library, and no system of library loan would guarantee every student in my classes a chance to read and analyyze the material thoroughly.

I am, therefore, requesting permission to reproduce the above material in mimeograph form for use in my English courses. Naturally, the reproduced copies will not be sold, but rather will be provided free to each enrolled member of the class.

DUANE SPILSBURY
Bakersfield College, Bakersfield, Calif.

EDITOR'S NOTE: Granted Gladly!

Where Ordinances Are Being Codified

We are now doing a second edition of the St. Petersburg (Fla.) Code of Ordinances, having done the same work for the city several years ago in preparing its first codification. We also are now codifying the ordinances for Orlando, Fla., and will begin other Florida city code work soon.

Also, we are codifying the ordinances and preparing new Codes for the following cities: Mobile, Ala.; Stamford, Conn.; Berwyn, Evanston, Wheaton, Wilmette, and Winnetka, Ill.; Muscatine, Iowa; Lake Charles, New Orleans, and Shreveport, La.; Melrose, Mass.; Ypsilanti, Mich.; Kansas City, Mo.; Burlington, N. C.; Anderson, S. C.; Sweetwater, Texas.

CHARLES W. SUBLETT, *President*
Michie City Publications Co.
Charlottesville, Va.

"No Second Chance"

For traffic safety to mean enough all must be informed—the children, the parents, and the motoring public. With this idea in mind, I presented a poster slogan idea to the London, Ontario, Traffic Committee which accepted the suggestion, whereupon it was adopted by the City Council.

The Council set aside $384 for brackets and the Junior Chamber of Commerce set aside $500 for prize money and the cost of manufacturing the placards. The first winning slogan, submitted by Raymond Howard, age fourteen, was "There's no second chance."

PHOTO COURTESY OF MRS. JESSIE LONGFIELD, LONDON ECHO LTD.

First winner of the London, Ontario, traffic safety contest.

I believe that this campaign will "catch on" and it is hoped that, by placing this article before your readers, others will undertake a similar campaign, both in traffic safety and in municipal public relations.

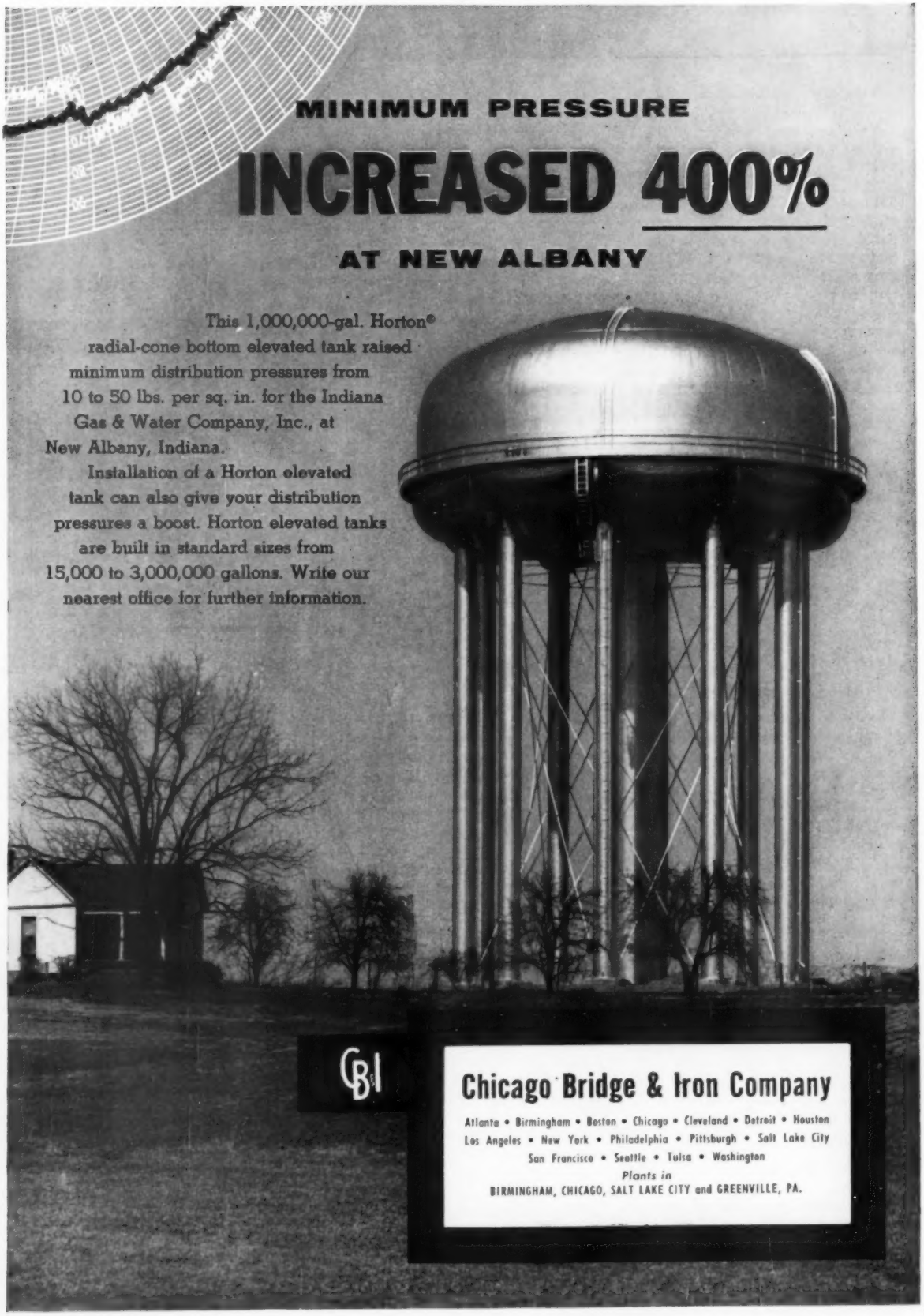
W. G. STRATHOPOLOUS, B.A.
Traffic Co-ordinator
London, Ontario, Canada

Federal Funds Proposed for Sewage Treatment

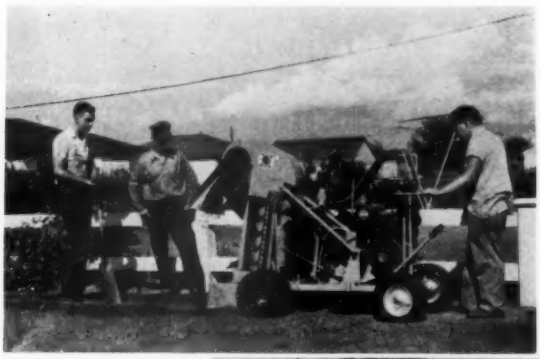
UNCLE SAM appears about ready to chip in and help finance the battle against stream pollution. The Senate bill, passed last year would contribute $2,000,000 per year over a 5-year period for state, interstate, and municipal sewerage projects approved by the U. S. Public Health Service. These funds would pay for one-third to two-thirds of the cost of any project.

Representative John A. Blatnik (D., Minn.), has more ambitious plans. As chairman of the House Rivers and Harbors subcommittee, he has introduced a bill that would authorize one billion dollars for sewage treatment. He places no time limit on this authorization, but would limit grants for any one year to $100,000,000. Federal funds would have to be matched on a 50-50 basis.

Both bills continue the Water Pollution Control Act passed in 1948. They authorize more research, but give the federal government little power needed to effectively enforce the Act.


MINIMUM PRESSURE
INCREASED 400%
AT NEW ALBANY
This 1,000,000-gal. Horton® radial-cone bottom elevated tank raised minimum distribution pressures from 10 to 50 lbs. per sq. in. for the Indiana Gas & Water Company, Inc., at New Albany, Indiana.
Installation of a Horton elevated tank can also give your distribution pressures a boost. Horton elevated tanks are built in standard sizes from 15,000 to 3,000,000 gallons. Write our nearest office for further information.
CBI
Chicago Bridge & Iron Company
Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston
Los Angeles • New York • Philadelphia • Pittsburgh • Salt Lake City
San Francisco • Seattle • Tulsa • Washington
Plants in
BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

Small Trencher Wins Friends for Nickerson



Above.
With the Ditch Witch service lines are installed with minimum damage to lawns and shrubbery.

Right.
The Ditch Witch features one-man operation.

A MODEL DWP Ditch Witch trencher continues to make friends for the Nickerson (Kans.) Water Department. This portable unit, manufactured by the Charles Machine Works of Perry, Okla., is particularly useful in close quarters or landscaped areas. Mr. G. L. Klatt, water superintendent, reports that the machine digs a 6-inch trench a maximum of 30 inches deep without destroying the surrounding grass or shrubbery as is often done by larger machines. It will go through a 36-inch opening and is easily handled by one man.

How Cincinnati Bills for Water Service

CINCINNATI has 132,822 water meters in service and issues more than 540,000 bills annually. Most customers receive their bills quarterly, but a few large accounts get monthly statements.

To handle this large volume, the city uses International Business Machine electric accounting machines to process cards punched from the reports turned in daily by the 20 meter readers. The machines print and address post cards from these process cards. The post card is designed with a cashier's coupon that is detached and returned when the customer makes payment.

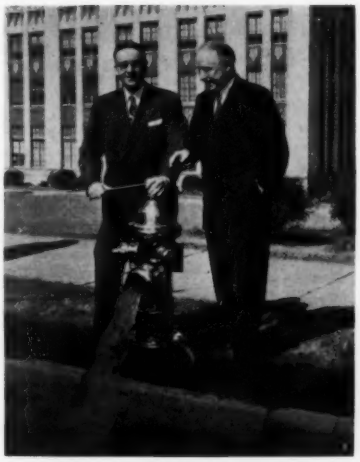
Sewerage service charges are added to the water bills for collection at the same time. If the customer does not pay his bill within four weeks, reminder notices go out, and if the bill still remains unpaid after ten days, the accounts are referred to field collectors who have authority to shut off the water if necessary.

When water is required for temporary use, such as for construction work, the department issues a permit authorizing the taking of nonmetered water from a fire hydrant or service branch. The city charges for water used in connection with the construction of buildings, based on the number of cubic feet of building content. The rates are aimed at the equivalent of 15 cents per 100 cubic feet and run as follows:

Type of Building	Rate per 1000 cu. ft. of building volume
Ordinary residence or apt.	$0.25
Commercial building	
less than 100,000 cu.ft.	.20
100,000 to 600,000 cu.ft.	.15
more than 600,000 cu.ft.	.10

The city charges double this rate for temporary nonmetered use of water outside the city limits. The Water Department is under the direction of C. A. Eberling, superintendent.

Atlanta's 10,000th Hydrant Chrome Plated



Atlanta's Mayor Hartsfield (right) looks on while Water Works Manager Paul Weir operates the new, shiny chrome-plated fire hydrant now located in front of city hall.

THE 10,000th fire hydrant installed in the Atlanta, Ga., water system to serve the more than 300,000 people of the city is one of special distinction. The Mueller Company, manufacturer of many of the hydrants in the city, supplied a shiny, chrome-plated unit, and presented it at a dinner last March commemorating its installation.

The dinner also honored Paul L. Weir, president-elect of the American Water Works Association and general manager of the Atlanta system. The dinner paid recognition to his 28 years of service with the water works and also to his 50th birthday.

Mr. Weir also received a chrome-plated miniature replica of the hydrant, presented by Don E. Radcliffe, assistant to the vice-president of the Mueller Company.

One Street Sweeper Serves 4,000 People

A city with only six miles of curbed, paved streets still saves by using mechanical sweepers and flushers.

MORRIS, Minn. (population 4,000), can keep street sanitation on a business-like basis by using one street sweeper, according to J. A. Mielke, city manager.

The sweeper that the city uses is a Guttersnipe, made by the Municipal Supply Company, South Bend, Ind. The municipality has 6 miles of streets that require sweeping. It also uses a Rosco flusher to help keep the streets in good condition. Both machines cover the streets once a week, in the downtown area, and go over the residential streets twice a year. The sweeper will average 8 gutter-miles per month.

The street broom is supplied with African bass fiber. When the broom needs rewinding it is done by the city's crew. Each broom will average about 50 miles of sweeping before requiring refilling. Mr. Mielke estimates that the sweeper costs 1½ cents per mile to operate.

Hayward, Calif., Switches To Fast-Traveling Sweepers

CENTRAL dumping of street-sweeping debris is the latest step forward in good municipal sanitation in Hayward, Calif. However, to make it efficient, Maintenance Engineer Harry Brandt knew that he would have to use a sweeper that could travel fast to and from the dumping area when the hopper is full.

He had two old sweepers with 3-yard hoppers that traveled at speeds of 15 miles per hour when full. The average distance that they had to travel to the central dumping point was 7 miles, and this required well over one hour of "dead" time by the old, slow-moving sweepers.

To reduce this unproductive travel time, Mr. Brandt added one new Mobile sweeper, able to travel at an average speed of 35 miles an hour. This enabled him to reduce this unproductive time by half.

Hayward has a population of 40,000 and embraces an area of 13.23 square miles. Its crews sweep the downtown business district daily, from 11:00 p.m. to 7:30 a.m., and outlying districts once a week from 7:30 a.m. to 4:30 p.m. Each sweeper averages 413 gutter miles per month. The machines travel at speeds of 6 miles per hour when sweeping. The sweepers use Palmyra fiber in the street brooms and wire in the gutter brooms. The street brooms will average 240 miles per filling and the gutter brooms, 600 miles.

Big Basket Sparks Drive For New York Cleanup

A GIANT litter basket in the middle of Times Square was the New York City Sanitation Department's reminder to help keep the big city clean. The huge container was filled with trash that pedestrians threw on the streets and sidewalks of the Square, instead of in the curbside baskets.

The Times Square basket, although a little oversized, is a replica of the city's standard expanded metal litter baskets made by the Wheeling Corrugated Company, Wheeling, W. Va. Some 3,000 of them already are in use along the city's thoroughfares. Several thousand more will be on the streets before long. Sanitation Commissioner Andrew Mulrain expects to have the baskets spaced frequently enough so that no pedestrian will have an excuse not to use them.

The new baskets were designed to specifications set by the Department of Sanitation for efficiency and sturdiness. The expanded metal construction makes them light to handle but strong enough to withstand dropping and knocking. Holes in the bottom pan permit drainage.

The Scoopmobile loader has to have an extra lift in order to load trash into this big basket. Only trash that pedestrians throw on the Times Square streets, instead of curbside baskets, goes into it.

The new baskets are not the only target in the anti-litter campaign. New Yorkers are feeling the impact of the drive via the press, television, and movie houses. The Citizens' Committee To Keep New York City Clean has prepared newspaper ads and television spot films to encourage public tidiness, and local movie houses will soon cooperate with the anti-litter drive by showing shorts on the subject.

"We're finally getting
MOBIL SWEEPERS!"

CONVEYCO

Now—we'll get the
SWEEPING PERFORMANCE
—we're paying for..!

Communities across the Nation are buying on proven performance
—That's why they select
MOBIL SWEEPER.
on these **6 BIG POINTS**

- **Unsurpassed Sweeping Ability**
- **Greatest Mobility**
- **Proven Maneuverability**
- **Lowest Maintenance Cost**
- **Unequalled Safety**
- **Proven Economy of Operation**

The proven success of Mobil Sweeper is based on sound engineering design that gives you unsurpassed performance. No need to settle for less. Our large dealer organization in major cities throughout the United States and Canada stands ready to show you how MOBIL SWEEPER does a better job day in and day out at Lower Cost. Write for name of nearest dealer.

CONVEYCO **MOBIL SWEEPER.**

Division of The CONVEYOR CO.
3260 E. Slauson Avenue, Los Angeles 58, California

Please send literature on Mobil Sweeper.

Name_____
Title_____
Address_____
County_____
City_____
State_____ AC-5

Sewerage and Sewage Treatment

Fabulous Disneyland, Practical Sewers

PASSING from pioneer days into a dream world and then to the land of tomorrow takes but a short walk at the fabulous Disneyland. Frontierland brings back the days of Davy Crocket; childhood dreams are relived in Fantasyland, and Tomorrowland brings alive the dreams of all ages. But no matter in what "land" the visitor may find himself, conveniences such as water supply, sanitary facilities, fire protection, and highway access to the park are ready to serve him.

The 160-acre site is divided into approximately 100 acres of parking area and 60 acres of amusement park. Over 8,000 feet of vitrified clay pipe, varying from 4 to 12 inches in diameter, provide sanitary facilities for as many as 60,000 people a day.

The entire system operates by gravity flow. Sewage from the amusement park flows through an 18-inch trunk line to the City of Anaheim system and then through the County Joint Outfall to the sewage treatment plant. Effluent from the plant is discharged through a submarine outfall extending 7,000 feet into the Pacific Ocean.

Los Angeles to Alter Its Sewage Treatment

LOS ANGELES has again demonstrated its determination to protect the beaches of Santa Monica Bay by inaugurating the fourth step in the progressive improvement in sewage conditions and sewage disposal methods. Originally, sewage was discharged raw across the beach in the vicinity of Hyperion. Later, the city put in a screening plant and, when that proved inadequate, the modern Hyperion plant was constructed. However, Los Angeles has outgrown this plant.

The new program provides a new North Central outfall sewer to the Hyperion plant, changes at the plant to increase its capacity, a new ocean outfall to convey the effluent 5 miles out to sea, and a small outfall to discharge the sludge about 6 miles at sea and 300 feet below the surface.

Realizing that a prompt decision was essential, Mayor Poulson appointed a Citizens' Committee to study the problem and submit a recommendation. This committee, consisting of 21 citizens representing all of the appropriate professions and business interests, made a complete study of the entire expansion program. To assist in this study, the committee employed two outstanding sanitary engineers and consultants and also solicited the assistance of others, such as the Scripps Institute of Oceanography.

Secondary Treatment Discontinued

Secondary treatment now used at the plant consists of high-rate modified aeration. The committee proposed primary treatment only, with the effluent to be carried five miles out to sea, in approximately 200 feet of water, where it will be jetted out by pressure and oxidized. With this plan, the secondary treatment, which is an artificial oxidation, will be replaced with natural oxidation by the ocean waters at a distant offshore location.

Authorities believe that chlorination will not be necessary to meet the standards proposed by the Water Pollution Control Board.

The contract between the city and the engineers requires the latter to design the effluent outfall to "assure that the resulting condition in the ocean and beach waters will meet all requirements of the city and state authorities, including those of the Regional Water Pollution Control Board and the State Department of Public Health."

Sewerage Enabling Acts In Digest Form

THE State Water Pollution Control Board of California has recently completed a revised edition of the *Digest of Sewerage Enabling Acts of the State of California.* The purpose of the *Digest* is to aid any group investigating the installation of sewerage facilities by summarizing the laws and acts pertaining to the formation of public bodies empowered to construct, maintain, operate, and finance such facilities.

Contents

The *Digest* lists the acts permitting the formation of a basic organization that can construct, maintain, operate, and finance sewage facilities by the type of territory that the organization may include. This permits a person interested in providing sewerage for a given territory to proceed directly to a study of the acts that are available for use by the people within that territory. The digest of each individual act presents first a general picture of the type of organization permitted by the act and then lists the powers and outstanding features of the organization provided by the principal act or by other acts. Each digest also summarizes the procedure for formation, organization, and dissolution of the organization, and the provisions for annexation or exclusion.

Roy E. Ramseier, Consulting Engineer, Berkeley, Calif., under contract with the State Water Pollution Control Board, prepared the original report in 1951. A second edition was published in 1954, bringing the *Digest* up to date and adding three appendices. The publication as now revised includes the 1954 and 1955 legislative amendments to the enabling acts.

Copies Available

Single copies of the 1955 revised *Digest* may be obtained from the State Water Pollution Control Board, Room 10, 721 Capitol Ave., Sacramento 14, Calif., or from any of the regional water pollution control boards. Additional copies may be purchased from the Documents Section, State Printing Division, 7th and Richards Blvd., Sacramento 14, Calif., at a cost of 50 cents per copy. Upon request, governmental agencies may obtain a reasonable number of additional copies without charge.

WATER

the most beneficial and the most destructive element known

Three basic problems confront industries, municipalities and utilities in many parts of the world today.

TOO LITTLE WATER because of receding water tables in many areas, both coastal and inland.

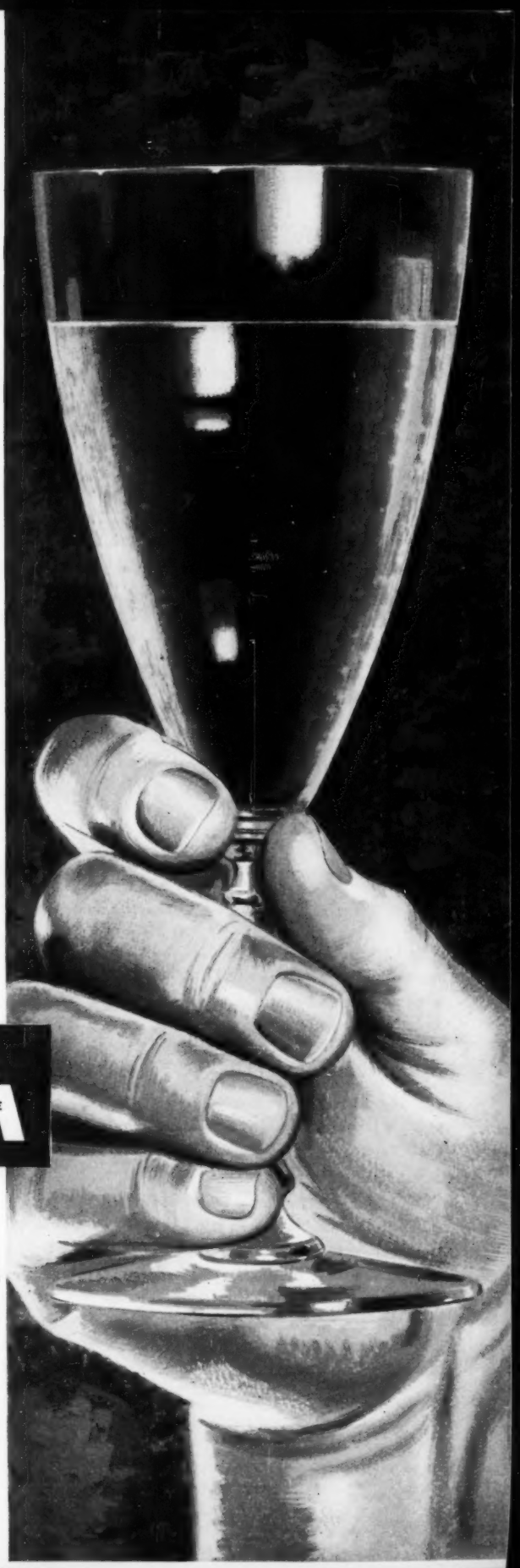
TOO MUCH WATER resulting in floods that are striking with greater frequency and severity.

WATER POLLUTION caused by influx of salt, excessive mineral content or other factors.

The men of Manu-Mine *know* water . . . how to conserve existing supplies . . . locate new ones . . . tame water that runs amok . . . repair flood damage permanently . . . eliminate causes of pollution.

Manu-Mine methods are often unconventional. Many were developed in our laboratories employing specialized techniques of our own geological staff, one of the largest groups of independent geological engineers. Manu-Mine has proven its ability in some of the toughest jobs and under the most adverse conditions.

If you have a water problem, call us at any stage of the game—for prevention or cure. Your own best interest suggests action on your part *before* trouble strikes.



MANU-MINE
Research & Development Company
Reading, Pennsylvania

GEOTECHNICAL PROJECTS: Geology and geological engineering, geophysics, geochemistry, soil mechanics and soils testing.

FOUNDATION ENGINEERING Soil stabilization, water control, ground-bearing support.

SOIL SOLIDIFICATION: Stabilization of foundations, control of water in tunnels, solidification of fluid soils.

MINING ENGINEERING: Shaft-sinking and tunnel-driving, ventilation, mine evaluation, development, roof control, fire control.

HIGHWAY DESIGN: Special studies in geology and surface stability, sub-base stability of road slabs.

NUCLEAR RESEARCH: Research in radioactive waste disposal, agricultural problems and nuclear energy.

RESERVOIRS: Rehabilitation and construction. Storage of liquids in open and underground pits.

MANU-WALL CONSTRUCTION: Retaining walls, damsites, viaducts, and other construction relating to the control of water.

CERAMICS: Research for the ceramic industry. Studying special problems for the brick and clay products industries.

NO. 933 TRAXCAVATOR*
on top of garbage disposal in Taylor, Texas

The City of Taylor, Texas, is another progressive community that gets rid of its garbage and trash by the sanitary landfill method. For some years a Caterpillar HT4 Traxcavator, purchased in 1946, was used. When the machine had run 20,000 hours it was traded in—at a good price—on a new CAT* No. 933 Traxcavator.

The Traxcavator does all the trenching, spreading, compacting and filling in layers, according to the recommended practice. "We haven't found its limit yet," says City Manager F. R. Cromwell. "It easily handles all garbage disposal for a city of 11,000."

The No. 933 is one of three new Traxcavators in the Caterpillar line, all efficient units for sanitary landfill as well as for other digging and loading purposes. Bucket capacities are 1 cu. yd. for the No. 933; 1½ cu. yd. for the No. 955; 2¼ cu. yd. for the No. 977. All have the traction and power to dig in hard material, to give you fast lifting action and easy maneuverability. A new oil-type clutch reduces maintenance and greatly lengthens clutch life. Full loads at every pass are assured by 40-degree tilt back of the bucket at ground level.

Nearly a thousand municipalities are now using Cat equipment to do a better job of sanitary garbage disposal. Your Caterpillar Dealer is equipped to help your engineers plan the most satisfactory method for your city. He has the right machines to fit your needs in a complete line of Traxcavators, bulldozers and scrapers, and the factory-trained service men to keep them in top condition. Ask him for a demonstration at the site you choose.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar, Cat and Traxcavator are Registered Trademarks

MODERN HEAVY-DUTY EXCAVATING EQUIPMENT

Street Construction & Maintenance

Federal Highway Bill Looks Good for Cities

IF anything like the Fallon Bill, currently being considered by Congress, becomes law, urban areas are bound to benefit substantially. Even before the bill had emerged from committee consideration, New York City's aggressive construction coordinator, Robert Moses, had staked a claim to $150,000,000 for a pair of cross-town expressways.

The Fallon Bill (H. R. 8836) is designed to make a reality of the 40,000-mile "National System of Interstate and Defense Highways." This network, given paper authorization by Congress in the past, had no real possibility of being completed with the funds provided under the terms of the old federal aid legislation. The bill authorizes $24,825,000,000 to be spent over a 13-year period, apparently enough to complete the system.

Almost an Outright Grant

The bill is almost an outright grant. It provides that federal funds will be matched by state funds to the ratio of 90% to 10%. Consequently, it gives urban areas the opportunity to correct a great many traffic-throttling bottlenecks without any great outlay of their own funds. Cities generally will be well advised to follow Mr. Moses' pattern and see that their respective state highway departments give high priority to projects on this Interstate system in their urban areas.

The bill also steps up the amount of money available for the older Federal aid primary and secondary systems, including extensions in urban areas. It adds $25,000,000 to the $700,000,000 already authorized for 1957, and then increases to the total amount to $750,000,000 for the following year, and $775,000,000 for the next. These are allotted on the well-established 50-50 basis with 25% of the funds earmarked for extensions of the Federal Aid systems within urban areas. Actually much more of the money will be spent in urban areas for the simple reasons that these areas have spilled out over territory that once was rural and still is served by primary and secondary highways. There is no reason not to expect over 50% to update highways serving cities, towns, and villages.

Utility Relocation Costs

One controversial point that has the utilities, particularly the water systems, worried, is payment for relocation of utility facilities necessitated by changes in the roadway. Over the years, utility use of the highway rights-of-way has been considered permissive rather than a fundamental right. When roads were geared to the horse and buggy, and when these utilities were small and inconsequential, the cost of changing was unimportant.

Today, however, highways become formidable structures, and urban areas would have difficulty surviving without the use of their utilities. Moreover, many small urban areas cling to the sides of their major highways, and when these are widened, or the elevations changed, it is necessary for almost the entire utility system to undergo the process of being rebuilt so as to conform.

The Federal Highway bill probably will go along with state policy. If the state permits highway funds to be used to relocate the utilities then Federal funds can similarly be used. The possibility also exists that Federal funds will be permitted to defray half the cost of utility changes in states that are not legally obligated to pay these changes as a legitimate road and street construction expense.

From an overall viewpoint, the bill looks good for urban areas. If it has not passed by the time this issue appears, the local governments of these urban areas would benefit themselves by urging quick adoption.

Less Costly Heavy-Duty Asphalt

ASPHALT surfacing that has to carry heavy traffic seems to be headed for a price drop. Research engineers at the Asphalt Institute, College Park, Md., are encouraged by preliminary findings of a long-range investigation of asphalt mix design. The studies indicate that a 15% reduction in the amount of relatively expensive coarse aggregates in an asphalt paving mix may be possible without sacrificing any pavement strength.

A heavy-duty asphalt paving mixture is composed of coarse stone aggregates blended with sand and mineral filler and bound together with asphaltic cement. This mixture is then laid on a prepared base and compacted into a smooth, tough mat.

Results of Labortary Tests

The cycle of laboratory tests recently completed at the Institute, directed by John M. Griffith, research engineer, has shown the highest Marshall stability value with a coarse aggregate content of about 45%. This differs from other findings where an optimum coarse aggregate content of 60% has been recognized as having the maximum stability value.

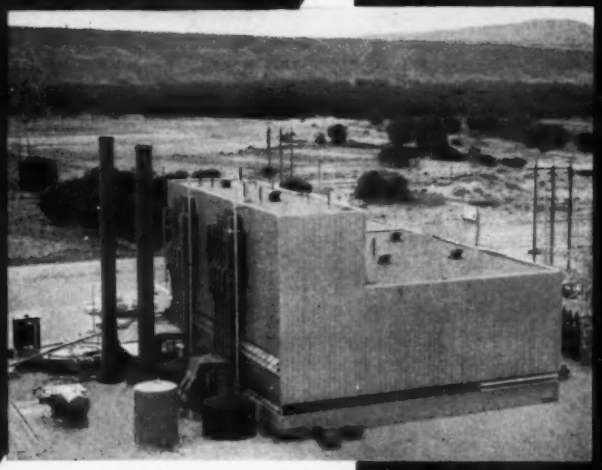
The Institute's laboratory program, now entering its second phase, embraces one of the most comprehensive studies of bituminous mix design ever undertaken. Nine types of coarse aggregates, considered to be representative of substantial construction usage throughout the United States, are being used in various combinations with fine fractions and at varying asphalt contents.

The Marshall method was employed in a recently completed series of tests. A similar cycle of tests using the Hveem procedure is now under way and the studies will continue through a limited number of other test methods.

The nine aggregates include New York traprock, Ohio limestone and slag, California and South Carolina granite, and gravel from Maryland, Tennessee, Michigan, and Washington State.

four different water sup
from one water treat plant
by GENERAL

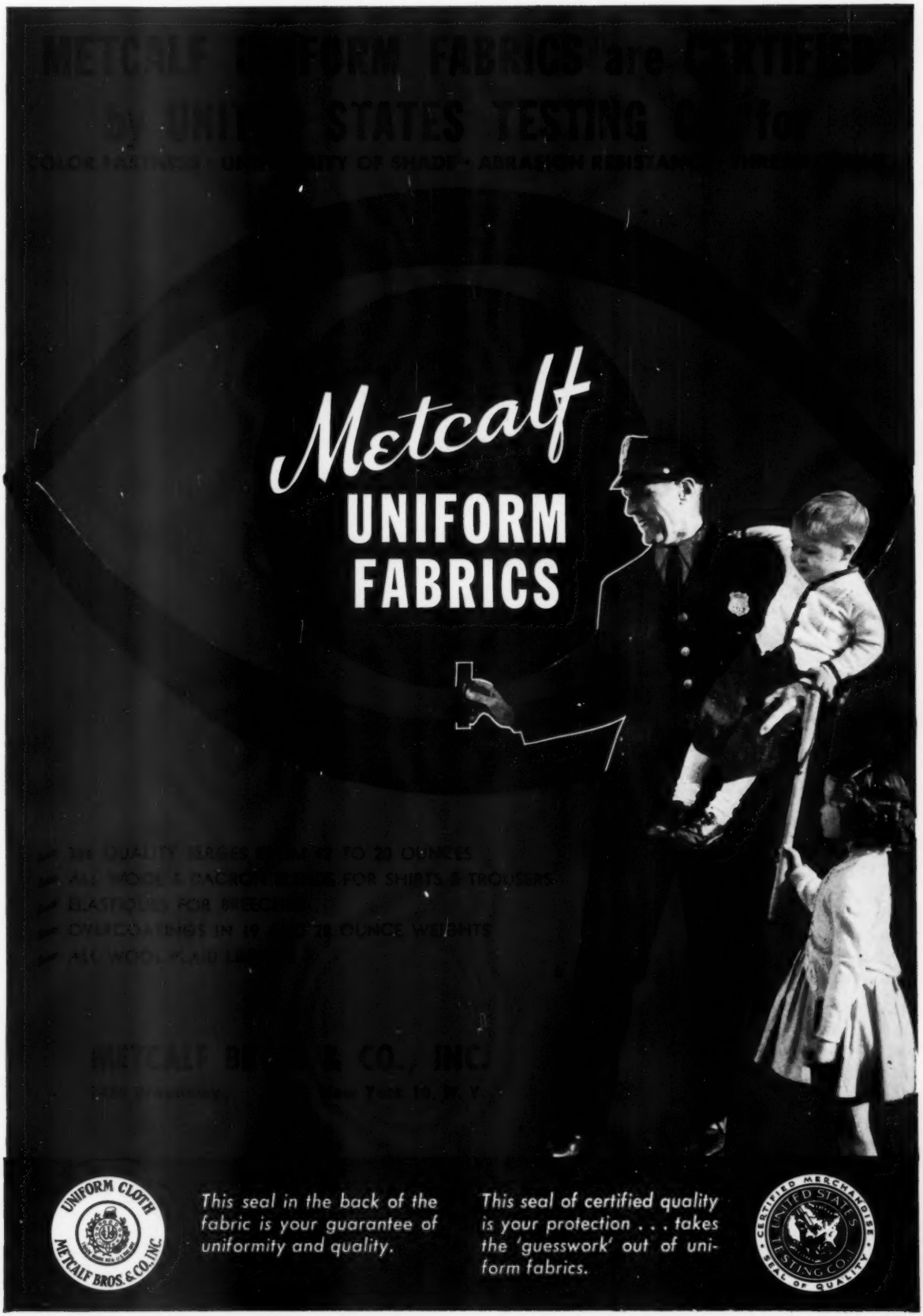
The Plains Electric Generation and Transmission Co-operative recently completed at Algodones, New Mexico, provides 30,000 kilowatts per hour to Southwest consumers.



Ask for recommendations for a water treatment plant "job-engineered" to your requirements . . . a fast, efficient, economical system by General Filter.

General Filter Company
AMES, IOWA

" . . . better water"


Metcalf
UNIFORM
FABRICS
UNIFORM CLOTH
METCALF BROS. & CO. INC.
This seal in the back of the fabric is your guarantee of uniformity and quality.
This seal of certified quality is your protection . . . takes the 'guesswork' out of uniform fabrics.
CERTIFIED MERCHANDISE
UNITED STATES TESTING CO.
SEAL OF QUALITY

THE CAT* No. 112...

SPRING TONIC FOR WINTER-WORN ROADS

CATERPILLAR NO. 112 MOTOR GRADER, ON THE JOB FOR THE CITY OF UNION, MISSOURI

Rutted roads and cracked streets—the toll of winter. Every spring the crews go out and put our highways and streets together again. And every spring that dependable year-around performer, the Caterpillar Motor Grader, goes with them.

For cleaning up after winter, for shaping ditches, for every sort of road job from rough cutting to finishing, there's no piece of machinery comparable to these big yellow graders.

In Union, Missouri, Street Commissioner Oscar Lampkin depends on the Cat No. 112 because of its "all-around good features, because it holds up good, because it does good work."

Throughout the country, public officials depend on the No. 112 because it costs less to maintain, costs less to operate, produces more, and lasts longer.

Its new tubeless tires—now standard equipment—are safer, and can cut over-all tire down time by 80%.

Its reliable 75 HP Caterpillar Engine delivers efficient power from low-cost non-premium fuels.

Operators like its sure, positive mechanical controls; its unmatched visibility; its fast, accurate blade positioning; its accelerator-decelerator that lets you override the hand throttle for better maneuverability with considerably less clutch wear.

For spring clean-ups, for year-around duty, the No. 112 is an ideal public servant. Let your Caterpillar Dealer demonstrate why.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

99% OF ALL CAT MOTOR GRADERS EVER BUILT ARE STILL ON THE JOB

Parks & Playgrounds

Edited by JOSEPH PRENDERGAST, Executive Director, National Recreation Association

Municipal Marina Rings Up $22,000 Profit for Atlantic Highlands, N. J.

THE municipal marina owned by the small New Jersey seashore town of Atlantic Highlands netted about $22,000 profit for the Borough treasury during 1955, according to Joseph P. Dender, chairman of the Borough Harbor Commission which operates the marina.

For a small community with a permanent population of only 4,000, this represents a large source of income in addition to providing year-round and summer residents with a place to keep their boats—from tiny 6- and 8-foot dinghies up to the big 70- and 80-foot cruisers. Local merchants who sell everything from groceries to automobiles all agree that a great percentage of their annual business is directly attributable to the marina.

Accommodating some 400 craft, the marina cost over $1 million to build in the days just before World War II, Mr. Dender said. As early as 1933 interest in developing unused waterfront property on the shore of Lower New York Bay near Sandy Hook began to generate among the forward-thinking town fathers. Not until four years later, however, was the Harbor Commission established with the authority to make arrangements for the harbor improvements.

The Commission, consisting of seven members, two of whom are required to be Borough councilmen, interested the federal, state, and county governments in helping with the project, and by 1939, the money had been raised and invitations for bids issued. With the U. S. government assuming better than four-fifths of the financial load necessary to construct a breakwater and dredge the harbor, the State of New Jersey supported almost 10% of the project. The citizens of Atlantic Highlands approved a bond issue for about 5% of the total cost of construction, and the remaining amount was underwritten by country funds.

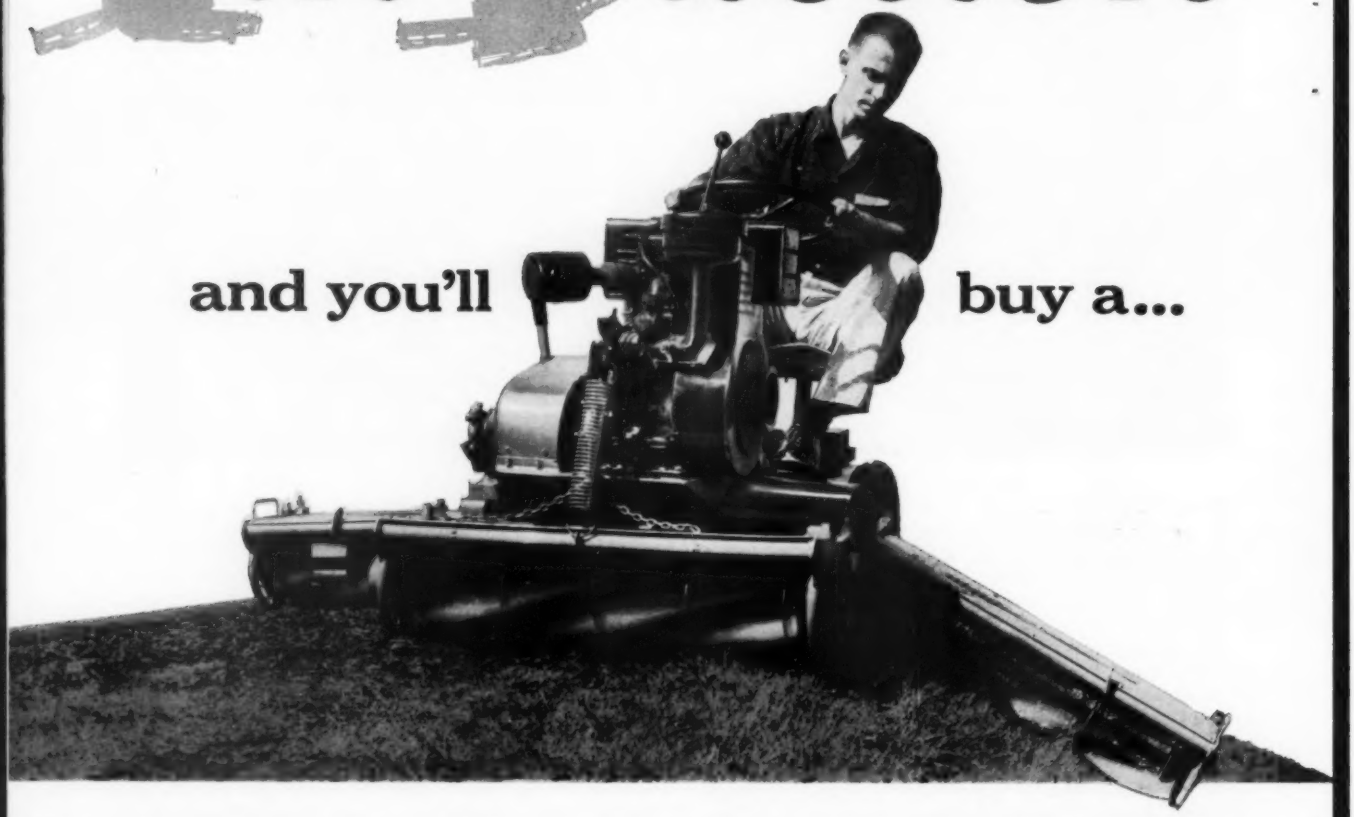
By the summer of 1941 the initial phase of the project was completed, including the 4,000-foot breakwater sheltering the 190-acre harbor. The anchorage was dredged to a depth of 9 feet at mean low water, and in some places it was actually 14 feet deep. From a 1,100-foot retaining wall along the shore, six piers were built out into the harbor. Each was 400 feet long, 12 feet wide and had a tee-shaped head 150 feet long paralleling the shore.

With the rapid rise in popularity of recreational boating in the years since the war, the marina has grown, and facilities have been added little by little so that today Mr. Dender points with pride to his community's installation as one of the most complete of its kind anywhere.

Mooring Fees

Operating on a seven-month season from April 1 to November 1, the marina can berth well over 400 boats of all varieties. Space for a small 8-foot rowboat runs as little as $35 for the entire season while a slip for the biggest private boats costs only about $300, less than $45 per month. Owners of commercial craft such as "u-drive-it" boats, party and charter fishing boats, and rental rowboats are required to pay a higher fee for space than private pleasure craft of comparable size. Provision has been made for the boating enthusiasts who carry their boats on trailers behind the family car. For only one dollar, transit trailer-boatmen can use either the small crane or the beach launching ramp and have a place to park their car and trailer while

see 'em all in action



and you'll buy a...

WORTHINGTON TRIPLEX

You should have a demonstration on your own grounds before you buy any mower! And when you do . . . *do your own testing!* Set *all* the machines side-by-side and compare them. Drive the others . . . then try the Worthington Triplex. There's a big difference. See how easily the rugged 8.4 hp engine starts. Note the transmission with a positive reverse and three forward speeds that gives you everything from a crawl to 8 mph . . . gives the unit everything from putting green frequency to big, fast, three-gang unit capacity. Watch it mow, effortlessiy, right up 36% slopes. Look back at the big 85" cutting swath that no other machines can equal and see the clean, even cut. Make a cutting height change with Worthington's exclusive, positive-locking, vernier-scale adjustment. Compare the three big 30" full size 8" diameter reels with other types. Here's a mower that can cut, in one hour, up to 6½ acres . . . even the new Bermudas and clover don't slow it down! This is the mower that's built for long service life and low maintenance. This is the machine for you. You can have a demonstration of the Worthington Triplex any time and anywhere you want it. See and try the Worthington Triplex. Prove to yourself its superiority.

Every Worthington Dealer is a Demonstration Dealer— ask for your demonstration today!

WORTHINGTON MOWER COMPANY

STROUDSBURG, PA. • DIVISION OF JACOBSEN MANUFACTURING COMPANY

WORTHINGTON JACOBSEN JOHNSTON

S-216

Atlantic Highlands' 400-boat marina is owned by the Borough and operated by a municipal harbor commission. The Administration Building (right) is surrounded by a 600-car, blacktopped parking area.

out cruising or fishing on the surrounding water.

Monthly slip rental rates are placed at one-third the season charge, while the weekly rate is 15% of the full amount. Visiting boats are granted free dockage for the first 12 hours. Thereafter, the owners must pay at the daily rate of five cents per foot.

The Commission maintains a hard-surface parking area for 600 cars and plans to double this in the near future. Boat owners will find electrical shore connections and fresh water at each slip, both included in the low rental cost. Fuel, lubricants, and ice are available right at the marina while all other supplies may be purchased in the main shopping cen er of the town four short blocks from the waterfront. The Commission provides large refuse cans at the shore end of each pier, and daily garbage collections, provided by the Borough, assure swift disposal of waste.

Only a few years old, the attractive administration building contains the office of the Harbor Master, who both supervises the daily business of the marina and maintains an up-to-the-minute account of all boat movements in and out of the harbor. Boat owners renting slips are given a key to private rest rooms and showers which are not accessible to the general public. The Commission permits the operation of a restaurant on concession. On the top floor of the two-story building a private yacht club rents space for its clubrooms from the Commission.

Revenues and Expenditures

The Commission employs five men to run the marina —the Harbor Master and a clerk, two gasoline attendants, and a general porter and handyman. In 1955 all income from the slip rentals, fuel sales and other incidentals, totalled some $99,000, Mr. Dender said. Total operating expenses amounted to $77,000, leaving a profit of about $22,000, much of which could be filtered directly into the general funds of the Borough.

The small waterfront community of Atlantic Highlands has found that the development of its municipal marina has added much to the life of the Borough. The merchants find themselves doing more business because of the marina and fallow, unimproved waterfront property has been converted into a sizable profit yielder for the public treasury. Boating has paid off for Atlantic Highlands!

National Recreation Month

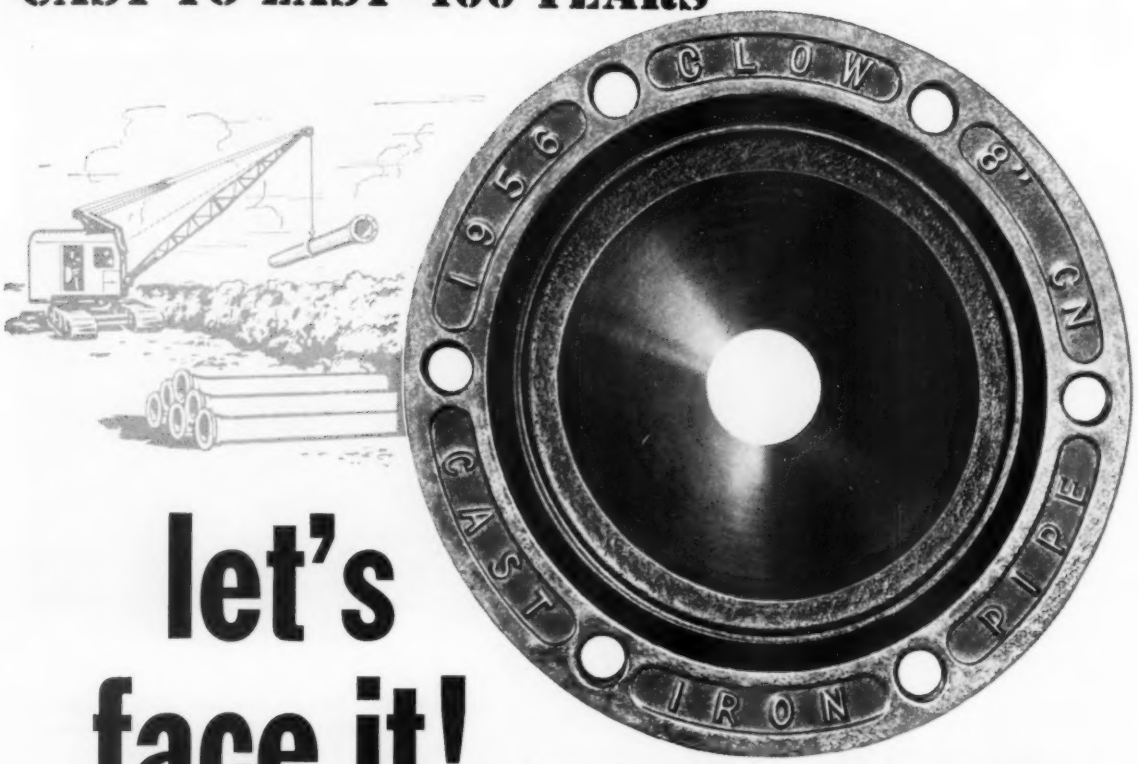
MUNICIPAL park and recreation commissions throughout the country are preparing to celebrate National Recreation Month during June. Many are using the occasion to focus public attention on the importance of local support for home-town park and playground activities.

June was selected as NATIONAL RECREATION MONTH because it is literally "bustin' out all over" with every kind of recreation activity as playgrounds, beaches, pools, and summer camps throw open their gates. National and state parks also receive their first influx of summer visitors at the same time.

As a highlight of the observance special certificates of appreciation will be awarded to municipal officials and civic leaders who have made significant contributions to the recreational movement. Awards will also be made to service clubs and other organizations who have given outstanding service to the promotion of park and playground activities. These special presentations by the National Recreation Association which designated June as National Recreation Month will be made as a part of the Association's 50th Anniversary celebration.

A special brochure and program guide outlining suggestions and plans for NATIONAL RECREATION MONTH may be obtained without charge by writing to the National Recreation Association, 8 West Eighth Street, New York 11, New York.

CAST TO LAST–100 YEARS



let's face it!

CLOW CAST IRON PIPE MEETS ALL REQUIREMENTS

When you lay pipe underground
it must be strong . . . tough . . . uniform . . . and durable.
Before specifying pipe for your system, consider these 10 fundamental requirements for any underground pipe for water service.
Clow Cast Iron Pipe meets them all!

LONG LIFE—proved to be 100 years and more
BURSTING STRENGTH—for working pressure plus water hammer
TOUGHNESS—to resist shock and impact
TENSILE STRENGTH—to withstand high bursting pressure
BEAM STRENGTH—to withstand trench and traffic loads
COMPRESSIVE STRENGTH—to resist crushing loads
IMPERVIOUSNESS—no leakage, seepage or sweating
TIGHT JOINTS—of proved dependability
TAPPING STRENGTH—for strong, clean threads
FLOW CAPACITY—large, smooth bore for maximum flow

SINCE 1878

JAMES B. CLOW & SONS, Inc.

201-299 North Talman Avenue, Chicago 80, Illinois

Subsidiaries:
Eddy Valve Company, Waterford, New York
Iowa Valve Company, Oskaloosa, Iowa

Our Municipal Notebook

Federal Urban Renewal Procedures Being Reappraised

FOR SOME TIME local redevelopment officials have been complaining about the government red tape that has hampered their efforts.* They will be glad to know that a full-scale reappraisal of Federal Urban Renewal procedures is being undertaken at the direction of Housing and Home Finance Administrator Albert M. Cole and Urban Renewal Commissioner James W. Follin. Mr. Cole believes that this review will result in simplified, more effective procedures for assuring that federal requirements are adhered to and at the same time disclose areas where paper work and detailed submissions by local communities can be safely reduced.

The two fundamental objectives of the reappraisal will be:

1. To maximize local freedom for planning, decision, and action consistent with the Housing Act of 1954, and to maximize simplicity and flexibility in administration.

2. To assure full protection at all essential points of the basic responsibilities of the federal government and of the integrity of the program.

The review of federal procedures, Mr. Cole said, is one of a series of major administrative steps to relate federal administration to local action, beginning more than a year ago with the decentralization of urban renewal operations from Washington to field offices.

"We have entered a new phase in Urban Renewal," Mr. Cole stated. "When this program began there were no guideposts for either the federal government or local communities to follow, and it was necessary to spell out, step by step, just what a community had to do to qualify under the law for federal help.

"But those pioneering days are behind us. Scores of communities today have experienced, well organized administrative organizations that can assume their appropriate resonsibility for local initiative and determination, and we want to give it to them. At the same time, we must continue to protect and safeguard the federal interest and responsibility in these projects. . . .

"Although changes and improvements in specific procedures have been made over the years, we believe that we now need to look at the whole procedural machinery from the point of view of a growing, successful, and fast-moving program that is no longer a mere hope and a theory, but is actively at work and moving ahead in hundreds of towns and cities in this country."

* See "Surveying the Barriers to Local Redevelopment Progress," page 154 of the March 1956 issue of THE AMERICAN CITY.

Robert Matteson To Head Public Administration Society

IN A FINAL STEP that set into motion a $245,000 development program, the American Society for Public Administration announced last month that Robert J. M. Matteson will become its first full-time executive director. In directing the five-year program, Mr. Matteson will expand the activities of the Society which is the principal national organization representing officials in all levels of government who are interested in advancing the techniques of public administration.

Eminently qualified for the new position, Mr. Matteson has been a senior staff member of the Institute of Public Administration in New York City. In that capacity, he has supervised a wide variety of studies of governmental administration and has been director of training for the institute. He is a past president of the New York Metropolitan Chapter of the ASPA.

As announced by the Society, the development program, which is being financed by a grant from the Ford Foundation, will:

1. **coordinate and give additional professional leadership to the extensive volunteer efforts of members of the Society as a means of strengthening the Society's program and membership;**
2. **improve channels of communication among administrators at all levels of government and among persons in universities and other organizations with an interest in public administration;**
3. **expand the Society's existing informal programs of continuing education for public administrators;**
4. **promote, among competent university students and others in the process of choosing a career, an interest in entering the field of public administration;**
5. **enhance the prestige of public service.**

Mr. Matteson's offices will be in Chicago.

Flint, Mich., Municipal Center

FLINT city officials received bids totaling $4,643,922 for constructing six new municipal buildings: city hall, police headquarters, municipal courts, public health center, auditorium, and power house. Each building will be constructed to permit expansion at a later date. Office partitions will be moveable to allow for shifting between departments. The architectural keynote is described as long, low lines, of startling simplicity.

Large expanses of glass will be tempered with white marble panels and brick and metal panels with colored porcelain enamel finish. All buildings will be connected with covered walks.

The buildings will be grouped around a landscaped mall and reflecting pool. A parking area and a recreational park will also be included. Upon completion, scheduled for late 1957, Flint will have an integrated, modern municipal center.

Japan Sends Cherry Tree Seeds To Further Understanding

A SHIPMENT of one million seeds of the flowering cherry and ginko trees will leave Tokyo this month, courtesy of Northwest Orient Airlines, for distribution to communities in the United States. The seeds are collected by the school children of Japan and are sent each year by The Friends of The World, Inc., as gifts to other countries, in the hope that international understanding will thus be furthered.

The seeds take six months to germinate and about five years before they are ready to be put into parks. New York City received a gift of cherry tree seeds in 1952 and reports that over 500 small trees have been raised on Rikers Island under the supervision of the New York Park Department. They now measure about 2 feet and will be placed in the city's parks within another two years.

All requests should be addressed to Friends, c/o Japan Travel Information Office, 10 Rockefeller Plaza, New York 20, N. Y., or 651 Market St., San Francisco 5, Calif. Planting instructions will be sent with each shipment. In states having restrictions against admitting cherry seeds, the ginko seeds will be sent.

Sports Center for Brooklyn

IN A MOVE that establishes a new use for the authority technique, the New York State Legislature has recently created a Brooklyn Sports Center Authority.

Its purpose is to construct, operate, and maintain a sports center at a suitable location in Brooklyn, designed not only to replace Ebbets Field (the Brooklyn Dodger's quarters), but also to provide a proper arena for all kinds of sports events, meetings, exhibitions, and other events of civic, community, and general public interest.

The Authority will be a public benefit corporation consisting of a chairman and two other members appointed by the Mayor of New York City —all unpaid but reimbursed for expenditures. It shall remain in existence for five years plus the time needed to pay off all obligations.

The center is contemplated as part of an over-all community rehabilitation and improvement project embracing the removal of the old Long Island Railroad terminal, relocation of the tracks and of an obsolete meat market, elimination of substandard and unsanitary areas, and revision of the present street traffic patterns to relieve congestion.

Two safeguards against extravagant or unwise use of funds are embodied in the requirement that the Authority's bonds be repaid exclusively out of its revenues and the requirement that site and plan decisions are subject to prior approval of the City Planning Commission and the Board of Estimate. The Authority will have $30,000,000 to spend on the center.

New Port Facilities For Miami

MIAMI is scheduled to have completely new port facilities at a different location, built to a plan originated by Arthur E. Darlow, director of city engineering. The $16,000,000 project probably will be initiated this year.

Director Darlow plans to place the new port on Dodge Island, about a mile east of the present docking facilities. Under his program, 100 acres should be provided for development. The old port occupying valuable property along Biscayne Boulevard, would be razed, filled in, and sold to help finance the new project.

In addition to commercial ship facilities, the port will emphasize pleasure boating. It will have ample cruise-ship facilities, and a big marina able to accommodate 188 boats up to 100 feet in length.

The harbor plan requires no additional purchase of land since the city already owns the property needed for both the port facilities and the new bayfront drive. Alternate plans called for expansion of the port at its present location and the purchase of land with a high price tag.

Employee Conferences Pay Dividends

APPARENTLY, an urban area with 300 or more employees will find that work proceeds better if the employees have the advantage of good constructive conferences with their supervisors. M. A. Butcher, director of public works for urbanized Montgomery County, likes to use five types.

Employee Orientation is one of the first, given to any new employee, whether he is a common laborer or a senior engineer. At the conference his supervisor explains his job to him, lists his hours of work, his duties, and the fringe benefits that he can expect.

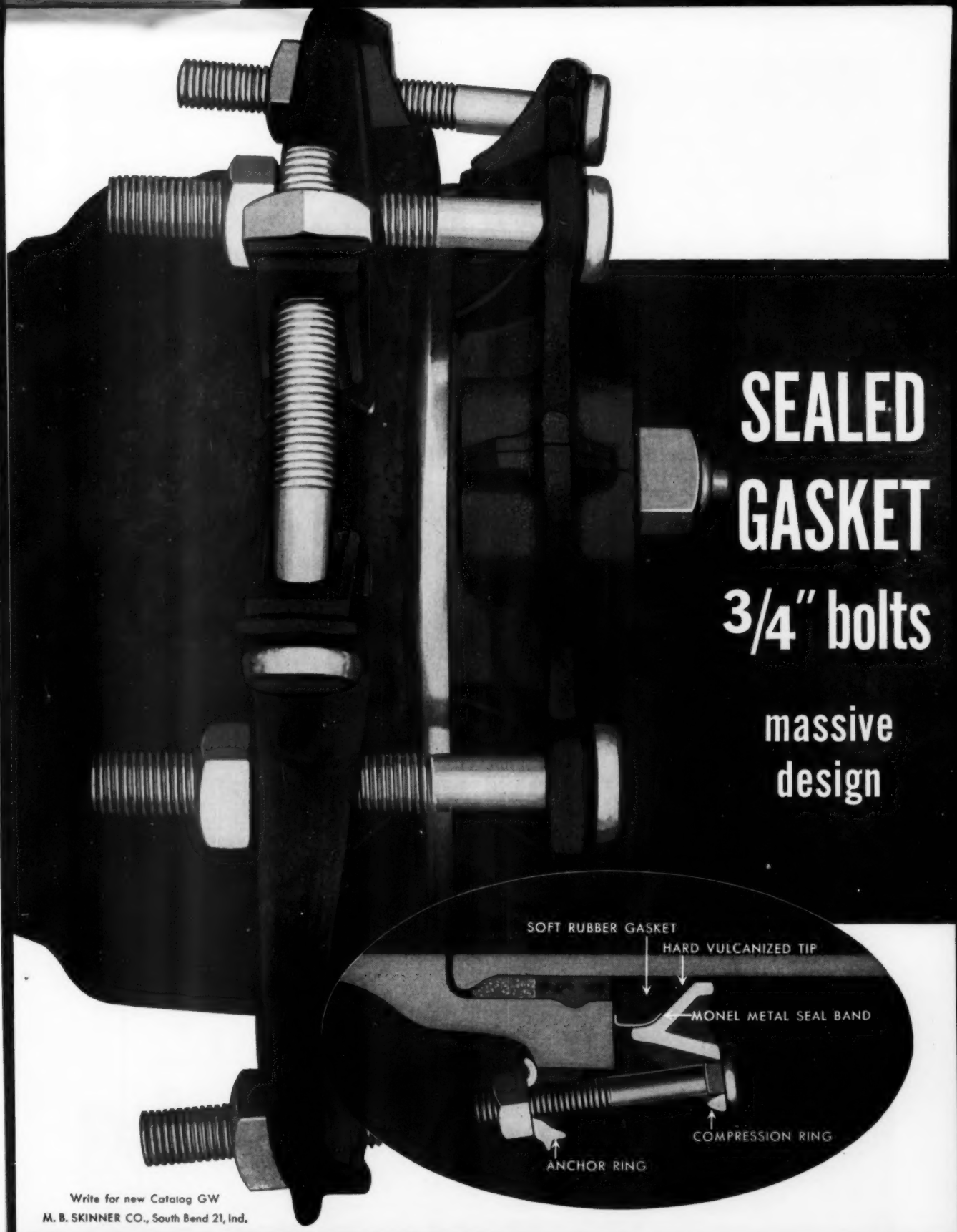
Scheduled Work Conferences should be conducted almost daily. The foreman who can give complete and coherent directions and instructions can eliminate many wasted man-hours. Mr. Butcher emphasizes that it it just as important to have an employee know the day's program as it is for the responsible supervisor.

Training Programs are used constantly by Mr. Butcher to teach new employees methods used by the department, and to train old employees newly developed techniques. All employees get refresher courses from time to time. Older employees may resent spending time for training. Properly handled, however, Mr. Butcher finds that even a single meeting pays tremendous dividends. For instance, the county, when it installed its Motorola two-way radio system, called all employees who might have contact with it, into a training conference. Motorola's representative explained the syystem and employees were free to ask questions. Since then, the department has had to issue no further instructions, written or oral, on the radio system. The conferences have saved more than 200 man-hours.

National associations, such as the Portland Cement Association, have been helpful in the Montgomery County program.

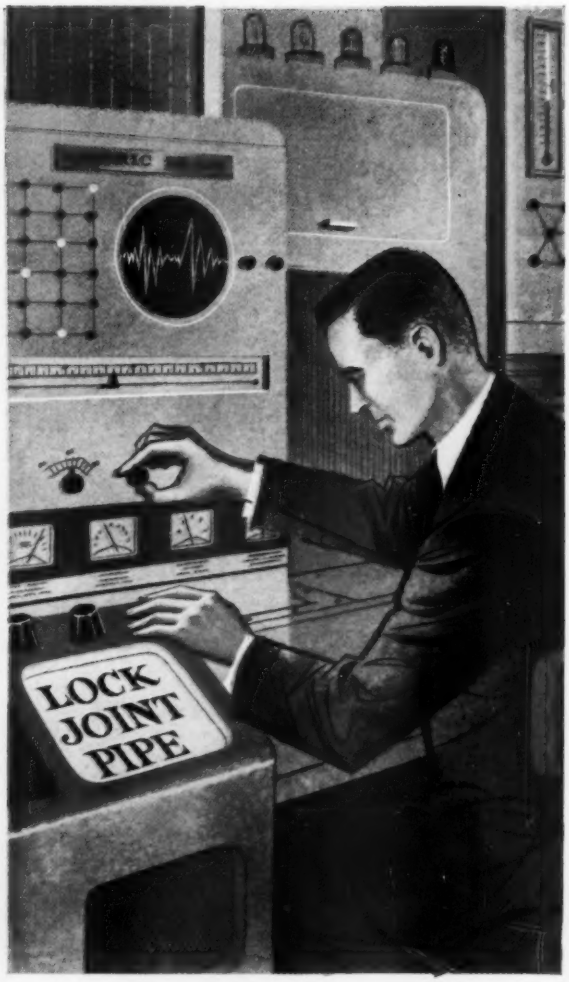
Grievance Conferences, often are not given sufficient consideration, in the opinion of Mr. Butcher. A grievance in the mind of an employee is real to him, even though it may not be to others. Such complaints, not handled with promptness and understanding, can mushroom into insolvable situations.

Termination Interviews should be offered any employee who is resign-



Write for new Catalog GW
M. B. SKINNER CO., South Bend 21, Ind.

SKINNER-SEAL **BELL JOINT CLAMP**



NO MATTER HOW YOU FIGURE IT...

When you undertake the purchase of a new pipeline for your water supply system, do you figure from the financial angle—low first cost, economical installation and a long life for your investment?

Or are you more interested in the construction of the line—minimum excavation, easy assembly, and watertight joints in a pipe strong enough to withstand high pressures and heavy external loads?

Then, again, your specialty may be maintenance. In that case you probably figure minimum repairs through freedom from breaks and leaks to be of paramount importance.

Or is your main concern with operation? If so, you no doubt figure permanent high carrying capacity, low pumping costs and trouble-free service to be vital.

Still, *no matter how you figure it*, your best answer will always be LOCK JOINT CONCRETE PRESSURE PIPE, because it most nearly approximates the ideal pressure pipe for water works systems.

LOCK JOINT PIPE CO.

East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Mo.

Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

ing so that he can explain his reason for leaving. The resigning employee often can bring to light situations that the supervisor may have overlooked.

Montgomery County is in the Baltimore suburban area. Its county seat is Rockville, Maryland. Its population has more than tripled since 1940 and now is approximately 300,000. The Department of Public Works has over 300 employees.

Oakland Parks Use Cardboard Trash Containers

THE OAKLAND, CALIF., Park Department has been experimenting with the use of light-weight, colorful, cardboard trash containers set in a metal base. The Department finds that even in inclement weather, the trash container, which is treated with

New trash cans are easy to store, inexpensive, and disposable after use.

a sizing material and waterproof adhesive, will last three or four weeks. When it becomes soiled or damaged, it is disposed of and a new container is substituted. Thus, attractive new colors and newly printed messages may be displayed periodically. The containers come flat from the mill and are easy to store and to assemble, clean looking, and inexpensive. Zellerbach Paper Company and Fibreboard Products, Inc. have been aiding the Park Department in the development of these containers.

The new receptacles will be placed throughout the park system as part of the Department's campaign against the litterbug nuisance.

Other Professions Described as Bases for City Planning Training

IN DESCRIBING its graduate program of city planning, the Georgia Institute of Technology has published a series of folders in which eminent men tell of the role of their profession as related to city planning.

For example, S. Herbert Hare, prominent city planning consultant in Kansas City, Mo., discusses landscape architectural training as a basis for the study of city planning; Edwin S. Burdell, President of The Cooper Union of New York, describes the role of the sociologist in city planning; architect-planner Henry S. Churchill that of the architect; lawyer-planner Norman Williams, Jr., that of the attorney; and Alvin H. Hansen, Professor of political economy at Harvard University, that of the economist. Others who discuss their professions as bases for city planning training are Harland Bartholomew, civil engineer and planning consultant, and James W. Martin, prominent authority on business administration, taxation, and public finance.

Further information about the courses and the folders may be obtained from Howard K. Menhinick, Regents' Professor of City Planning, 225 North Ave., Atlanta, Ga.

Smog Research Increases

THE SMOG PROBLEM of Los Angeles and the nation's other leading metropolitan centers is now receiving the attention of more than 13 major research agencies from coast to coast, at an annual cost of more than $6,000,000, according to a research survey compiled recently by the Los Angeles County Air Pollution Control District.

Of this sum, about $4,500,000 is being spent this year by 12 major private and public agencies while $2,500,000 is being spent by the County Air Pollution Control District of Los Angeles County. The Control District programming expanded control and research activities for the next fiscal year amounting to nearly $4,000,000.

The survey shows that top priority is being accordcd the air-pollution problems associated with motor vehicle exhausts, with more than $1,500,000 currently being poured into research aimed at eliminating or reducing the important role of motor vehicles in the creation of smog.

Also receiving major research emphasis is the effect of smog on human health. Investigating agencies are the U. S. Public Health Service, California Department of Public Health, and the University of Southern California, as well as other smaller institutions. Funds allocated for the various agencies total approximately one-half million dollars.

Copies of this survey of air-pollution research projects can be obtained from Mr. S. Griswold, Control Officer, Los Angeles County Air Pollution Control District, 434 S. San Pedro St., Los Angeles 13, Calif.

Are Your Public Buildings Slums?

A CIVIC CENTER is only as beautiful as its neighborhood. Thus says the American Society of Planning Officials in its latest Planning Advisory Service report, Civic Center Planning.*

The Service advises on a number of factors that can enhance the new civic centers now being planned to replace the overcrowded and underserviced government buildings that ASPO has compared to slums.

Among the points to be given careful attention are: the composition of a civic center—i.e., which agencies should be near one another, which cultural buildings should be separated from government buildings—the advisability of having branch centers to serve outlying areas; allowing ample space for future needs; recognizing the need for attractive surroundings. To attain the last of these goals, some cities have adopted special zoning provisions, says the report.

These provisions fall into three groups: (1) establishing a review board with authority to pass on the architectural features of any building erected in the area; (2) creation of a special zoning district for public buildings; (3) regulation of signs located within the civic center area.

* Available to subscribers for the Planning Advisory Service, 1313 East 60th St., Chicago 37, Ill.

Informative Catalogs - Yours For The Asking!

To obtain any of the following catalogs, write directly to the manufacturers or use the Post Card on the insert following Page 34

Automatic Control Systems for Water, Sewage Plants

497 Maximum efficiency in water and sewage treatment plants can be obtained inexpensively with new Taller & Cooper remote and local control systems. These systems permit the automatic supervision and control of pumps, valves, pressures, flows and other functions over a single pair of wires. They provide an automatic, continuous record of all operations. For *Folder 503-B*, write TALLER &C OOPER, INC., 75 FRONT ST., BROOKLYN 1, N. Y.

Get 40% More Rainfall

498 Is your city running short of water? To assure as much as 40% more rainfall, try cloud seeding. Seeding from the ground with silver iodide, vaporized by ground generators, is easy and economical. A sustained program of cloud seeding, over a period of years, will minimize the need for new water storage facilities. Write WATER RESOURCES DEVELOPMENT CORP., 460 S. BROADWAY, DENVER 6, COL.

Swift Chlorine Delivery

499 Chlorine storage worries are over when your city turns its chlorine problems over to JOHN WILEY JONES CO., 100 SUNNY SOL BLVD., CALEDONIA, N. Y. The company's six plants, strategically located across the country, stand ready to supply you. Shipments may be as small as a 16-pound cylinder of liquid chlorine, or as large as you want. Details and prices on request.

New Concrete Pipe Machine for Casting-in-Place

500 A new labor-saving method of casting-in-place No-Joint concrete pipe utilizes low-cost, portable equipment, eliminating the need for fixed plant locations. The efficient pipe machine permits on-site construction, reduces trench excavation, and minimizes expansion and contraction problems. Get full details from the NO-JOINT CONCRETE PIPE CO., P. O. BOX 512, YUBA CITY, CALIF.

"One-Man Crew" Does Many City Jobs

501 An Arrow mobile hydraulic hammer and one operator replace three or more men on such jobs as breaking pavement, cutting asphalt, and compacting trench backfill. The unit is quickly moved from one location to another on its own power. A special creeper drive, with foot-controlled start and stop action, facilitates compaction without skipping or overlapping blows. Write ARROW MFG. CO., 192 DAKOTA AVE., DENVER, COL.

Filtration Simplified at Water, Sewage Plants

502 Used in water and sewage treatment plants, the Glenfield Microstrainer is automatically and continuously operated under open gravity conditions with small head losses. The unit features a filtering medium of closely woven, stainless steel threads, providing apertures down to about 23 microns across. These retain all but the finest suspended matter. Get full details from GLENFIELD & KENNEDY, INC., 677 FIFTH AVE., NEW YORK 22, N. Y.

Is Your Reservoir Leaking?

503 Is the concrete in your sewage treatment plant suffering under the hammering blows of Messrs. Wear and Tear, with destructive assists from Old Man Weather? A practical answer to the problem of concrete deterioration is provided by economical Gunite. This versatile repair material is fully described in a new, 48-page bulletin from PRESSURE CONCRETE CO., 315 S. COURT ST., FLORENCE, ALA.

Easy Way to File City Maps

504 Facilitate the filing of large drawings, such as maps of city plants and sewage and water systems, with the new Roll-A-Way filing system. The system utilizes a long rack with a number of parallel tracks from which the maps are suspended. To get a full view of any map, you simply roll it from its filing place to the other end of the rack. Get full details from ROLL-A-WAY FILING SYSTEMS CO., 4845 BELLEVUE AVE., DETROIT 7, MICH.

Water Carrier for Workmen

505 Dispensit is the name of Parco's portable insulated water carrier. The light-weight carrier has a stainless steel interior, an aluminum-enamel exterior finish, and a fibre glass insulation. Water is drawn from an automatic chrome spigot which is easily removed for cleaning. For further information, write PARCO PRODUCTS CO., PENNSBURG, PA.

Disease-Resistant Elms

506 Increase the attractiveness of your community by lining streets and boulevards with Augustine Ascending Elm trees. This tree, a mutation of the American elm, has unusually strong crotches and anchorage, resists elm plague, and won't obstruct traffic. A columnar-shaped tree, it has large leaves and bears no seed. Write AUGUSTINE ASCENDING ELM RESEARCH ASSN., 932 E. 50th ST., CHICAGO 15, ILL.

Protect School Grounds with Chain Link Fence

507 During school hours, Anchor chain link fence provides safety and protection for school pupils and property. At night, it stands guard against vandals and intruders. Anchor fence needs no annual painting or upkeep. Deep-driven anchors keep it erect and sturdy in all kinds of weather and soil conditions. Write ANCHOR POST PRODUCTS, INC., FENCE DIV., 6905 EASTERN AVE., BALTIMORE 24, MD.

Meets All Requirements for Steel, Aluminum, Bronze

508 If your city is looking for a reliable source of supply for stainless steel, aluminum or bronze, contact THE MICHAELS ART BRONZE CO., INC., P. O. BOX 668-F, COVINGTON, KY. Michaels products are widely used for lamp standards, name plates, welded doors, windows and stair railings. They are fabricated to exact specifications, and the materials are at the location when needed. Write for details.

Dependable Water Filters

509 The filters are the heart of any water purification plant. Make sure the filters in your municipal water plant are completely dependable by specifying Roberts mechanical equipment. For further information on Roberts filters, write ROBERTS FILTER MFG. CO., DARBY, PA.

Street Signs of Porcelain Enamel

510 Constructed of permanent porcelain enamel fused on quality steel, Ferro street-name signs are clearly visible—day or night—and are immune to changing weather conditions. These durable signs are fully described in an illustrated leaflet. For your copy, write FERRO ENAMELING CO., 1100 FIFTY-SEVENTH AVE., OAKLAND 21, CALIF.

Paves Gutters, Curbs and Sidewalks

511 Paving operations are fast and easy when you use the efficient Dotmar paver. The unit requires a smaller paving crew, and eliminates the use of face forms. It paves up to 10 feet of finished curb or sidewalk per minute. For *Catalog 55*, write DOTMAR INDUSTRIES, INC., 511 HANSELMAN BLDG., KALAMAZOO, MICH.

Repairs Pipe Leaks Quickly

512 Don't interrupt water service in order to repair costly pipe leaks! Instead, use the efficient Atlas pipe tool and patches. The new tool consists of a sturdy, light-weight clamp, easily handled by one man. The patches, made of steel with neoprene gaskets, are shaped to fit specific pipe sizes. Write ATLAS INDUSTRIES, INC., 5601 ARMOUR DR., P. O. BOX 8152, HOUSTON, TEX.

Better Streets at Less Cost

513 Wherever asphalt is used—on city streets and roads—for construction or maintenance work—Berry's rubberized asphalt will fill the bill. This combination of rubber and asphalt is less susceptible to temperature, holds more aggregate and saves on bitumen. Too, it requires far less maintenance. Write BERRY ASPHALT CO., P. O. BOX 800, MAGNOLIA, ARK.

Clean Sewers Quickly

514 Now you can handle every sewer cleaning job faster and with greater efficiency by using Turco Maxi-Power sewer cleaning units. Each unit consists of two identical sewer cleaning machines. For a free, descriptive catalog, write TURBINE SEWER MACHINE CO., 1303 N. FOURTH ST., MILWAUKEE 12, WIS.

These Well Strainers Keep Water Flowing

515 Installed in municipal water wells, Cook well strainers keep water flowing and, at the same time, keep out coarse sand and large pebbles. These strainers assure fast, dependable pumping, and lengthen pump life. They are made by COOK WELL STRAINER CO., 3264 BEEKMAN, CINCINNATI 23, OHIO.

(Please turn to page 30 for more Bulletins)

Cutting costs is the primary function of portable conveyors

To make the greatest cost savings, portable conveyors must:

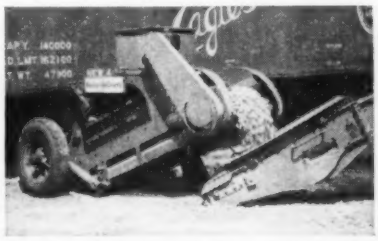
. . . have quality construction for long life and trouble-free operation. They must be available in the length and capacity range to suit your needs. They must be available with the features and accessories you want—screens, power hoists, pneumatic or steel wheels, gas or electric drives, etc.

They must be easy to move around the yard . . . easily towed from job to job. They must withstand constant use and frequent movement.

Shown above is the portable conveyor of advanced design, the Barber-Greene 363. Shaft and gear reducer drive—no chains—no sprockets, full swiveling wheels, Acme take-ups and many other exclusive features.

Shown below are other models in Barber-Greene's complete line of cost-cutting conveyors.

Model 374 cuts cost at high capacity. With capacities up to 425 t.p.h., this heavy-duty machine has antifriction bearings, shaft and gearbox drive, hydraulic boom hoist and other features.



Model 358 cuts cost of car unloading. Feeding a conveyor, this car unloader releases cranes and other expensive equipment for other work. Handles gravel, sand, stone, cinders, etc.

Model 362—low-cost, high-quality portable. Three-roll carriers, swivel wheel truck, and many other features not available on conveyors of this low-price range, are standard on the 362.

56-8-PO

Write for literature on any portable in the Barber-Greene line.

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Which Catalogs Interest You?

Write directly to the manufacturers or use the Post Card on the insert following page 34

The Right Tool for Every Job

516 "Spring Load" pipe cutters, tenon tools and vises may be used advantageously by water, sewage and public works departments. These tools are designed to do the job quicker and with less maintenance. Pipe cutters are available for cast iron, steel and asbestos-cement pipe. Write SPRING LOAD MFG. CORP., 3610 FIRST AVE. S., SEATTLE 4, WASH.

Water and Sewage Aeration Simplified

517 Operating without a compresser, diffuser plates or air piping systems, this new aerator-mixer delivers finely distributed air in compression throughout water or sewage. The Aer-O-Mix is easily installed in a small space indoors or out. It is available in all capacities from VOGT MFG. CO., INC., P. O. BOX 922, LOUISVILLE 1, KY.

Cleans Sewers Better at Less Cost

518 Cleaning sewers is a fast, easy operation when you use an O'Brien Sewerking power cable-rodder. A continuous cable, with cutting tool attached, is projected into the sewer by power, rotated for cutting by power, and retrieved and coiled in the storage drum by power. Rotating speeds range from 75 to 175 rpm. Write O'BRIEN MFG. CO., 5662 NORTHWEST HIGHWAY, CHICAGO 30, ILL.

Street Forms Speed Curb and Gutter Jobs

519 One "Complete Package" of these steel street forms will handle every concrete curb, curb and gutter, integral curb or sidewalk job from straight work to curved and serpentine shapes. The interchangeable forms are easy to set or strip, and practically eliminate hand finishing. They are available from the BLAW-KNOX CO., CONSTRUCTION EQUIPMENT DIV., 30 CHARLESTON AVE., MATTOON, ILL.

Aviation Lighting Equipment

520 A brand new catalog covers nine classes of aviation equipment—from rotating and flashing beacons to weather units. Airport marker lights occupy 26 pages. These are followed by 14 pages of catalog information on signal projectors, floodlights, searchlights and conduits for hangar lighting and wiring. Copies are available from CROUSE-HINDS CO., SYRACUSE 1, N. Y.

Controls Temperatures Automatically

521 Mercoid automatic controls for temperature, pressure, liquid level and similar applications in water and sewage plants, incinerators, electric power plants, pumping stations and gas systems are described and illustrated in *Catalog No. 856*. For your copy, write THE MERCOID CORP., 4201 BELMONT AVE., CHICAGO 41, ILL.

Speed Electrically Timed

522 Make the motorists in your community safety conscious with the Traffic Timer, an economical device that times traffic in either direction. The Timer has a large lighted dial for easy day and night reading. You can select the vehicle to be timed. For descriptive literature, write MUNI-QUIP CORP., 1451 W. DECATUR, DECATUR, ILL.

Water-Works Valves

523 *Bulletin 561* describes a complete line of water-works valves, including bell end and flanged end non-rising stem gate valves, and outside-screw-and-yoke gate valves, all conforming to AWWA specifications. Sizes range from three through 48 inches. For copies of the new bulletin, write KENNEDY VALVE MFG. CO., EAST WATER ST., ELMIRA, N. Y.

Better Street Lighting with Mercury Vapor Lamps

524 Used at traffic intersections, bridges and underpasses, Sylvania Golden mercury vapor lamps produce an attention-getting color of light. The lamp is available in the 400-watt BT-37 bulb size, and is interchangeable with all other standard mercury vapor lamps of the same wattage. For technical and application data, write SYLVANIA ELECTRIC PRODUCTS INC., LIGHTING DIVISION, SALEM, MASS.

To Catch A Thief

525 The old adage, "It takes a thief to catch a thief," may have worked once, but today's police departments will do lots better in the new high-powered Dodge police car. The new Pursuit features a super-powered Super Red Ram engine rated up to 230 hp. This assures a fast get-away, better roadability at high speeds, and dependable around-the-clock performance. For further details, write DODGE DIV., CHRYSLER CORP., 7900 JOS. CAMPEAU AVE., DETROIT, MICH.

Improved Surveying Instrument

526 A new Optical Plummet built into the Gurley transit speeds set-up time, and improves the accuracy of the instrument on windy days. The instrument is available in two models with shifting heads. It is described in *Bulletin OP-57* from W. & L. E. GURLEY, FULTON & STATION STS., TROY, N. Y.

Cast Iron Fittings for Water Pipe

527 Whatever your city's requirements in cast iron water fittings, they will be met promptly and efficiently by TRINITY VALLEY IRON AND STEEL CO., P. O. BOX 664, FORT WORTH, TEX. Right from stock you can get AWWA-approved short body and mechanical joint watermain fittings, 2 through 12 inches, and AWWA standard bell spigot watermain fittings, 2 through 24 inches. Other fittings are available on order.

Dependable Filter Bottoms

528 An increasing number of water filter plants throughout the country are turning to Leopold filter bottoms for top performance and dependable operation. Leopold bottoms are designed to work better and last longer. For additional data, write F. B. LEOPOLD CO., INC., 2413 W. CARSON ST., PITTSBURGH 4, PA.

Water Storage Problems?

529 Whether your city is interested in constructing a new water storage tank, or in repairing and painting an old one, the CHICAGO TANK & BRIDGE CO., will do the job efficiently and economically. For descriptive literature and specifications, address the company at 4404 W. STATE ST., ROCKFORD, ILL.

Protective Coating for City Swimming Pools

530 Whether your municipal swimming pools are of steel or concrete, they receive ample protection from a Parlon-based finish. Special Parlon formulations provide the colorful finish you want for your pools and, at the same time, cut maintenance costs. Protective coatings are available for interior or exterior, masonry, wood or metal. Write HERCULES POWDER CO., 997 MARKET ST., WILMINGTON 99, DEL.

Adjusts Time Cycle of Traffic Signal Lights

531 This device automatically establishes a time cycle and offset pattern of signal-light operation according to traffic requirements. For a full description of the "Electro-Matic Master," get *Bulletin E-222* from AUTOMATIC SIGNAL DIV., EASTERN INDUSTRIES, INC., NORWALK, CONN.

Simplifies Park Maintenance

532 Use this easy-to-handle power lawn mower in parks and cemeteries and on lawns and golf courses. The mower will not only cut, but will trim, too, eliminating streaks of rolled down, uncut grass. It turns at any angle, without raising the cutting units. Write THE LOCKE STEEL CHAIN CO., LAWN MOWER DIV., 1315 CONNECTICUT AVE., BRIDGEPORT 1, CONN.

Parking Meters Provide Top Net Revenue

533 Give your city the highest possible net revenue and maximum parking space turnover by installing Karpark parking meters. Karparks are available with automatic dump systems, sealable boxes or open top boxes, with coin combinations and time intervals tailored to your city's needs. For details on the Unimatic (single car parking), and the Twin-O-Matic (times two cars with one installation), write KARPARK CORP., CINCINNATI 6, OHIO.

New, Easy-to-Operate Chlorine Feeder

534 Available with automatic, semi-automatic, or manual control, the Everson Sterelator is ideal for use in municipal water-works, sewage treatment plants, and swimming pools. The economical chlorine feeder is easy to install and simple to operate. For Sterelator bulletins, write EVERSON MFG. CORP., 203 W. HURON ST., CHICAGO 10, ILL.

Better Playground Equipment

535 Equip your city's playgrounds, parks, picnic areas and swimming pools with sturdy American equipment. Included in the company's line are Jim Patterson "Lifetime" aluminum diving boards. For a free descriptive catalog, write AMERICAN PLAYGROUND DEVICE CO., ANDERSON, IND.

Dependable Water Meters

536 By measuring water accurately, Calmet meters provide a precise check on water consumption and waste, assuring your water department top revenues. For a detailed description of these economical meters, write WELL MACHINERY & SUPPLY CO., INC., FORT WORTH, TEX.

(Please turn to page 32 for more Bulletins)

RADAR controlled and guided, high speed rockets streaking through the stratosphere may deliver New York mail to San Francisco in less than an hour!

100 years from now...

WE MAY SEND MAIL BY ROCKET!

A century from now a wonderful, exciting and different world. But there will be one familiar note. The cast iron pipe laid today will still be carrying water and gas to the homes and industries of tomorrow.

In over 60 American cities, these dependable cast iron water and gas mains, laid more than a century ago, are still serving efficiently. And modernized cast iron pipe, centrifugally cast, is even stronger, tougher, more durable.

U. S. Pipe is proud to be one of the leaders in a forward-looking industry whose service to the world is measured in centuries.

U.S.
cast iron
PIPE
FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE
CAST IRON

U. S. PIPE AND FOUNDRY COMPANY, General Office: Birmingham 2, Alabama

A WHOLLY INTEGRATED PRODUCER FROM MINES AND BLAST FURNACES TO FINISHED PIPE.

Which Catalogs Interest You?

Write directly to the manufacturer or use the Post Card on the insert following page 34

Valves and Hydrants

537 Valves, fittings, and hydrants for water works, filter plants, sewage disposal plants, and fire protection services are described and illustrated in *Catalog 52*. For your copy, write M & H VALVE AND FITTINGS CO., ANNISTON, ALA.

New Packaging Program for Water Meters

538 Most parts for Rockwell meters are now being neatly packaged in convenient quantities, with each package clearly labeled. These compact packages prevent damage in shipment or deterioration in storage. They stack neatly on shelves—eliminate the need for bulky bins—and simplify inventory control and re-ordering. Write ROCKWELL MFG. CO., PITTSBURGH 8, PA.

Small Sweeper Cleans Downtown Areas

539 It takes a special kind of sweeper to get around congested traffic on downtown city streets. A small power sweeper that will do this job quickly and effectively is the new Wayne Model 606. The efficient sweeper has revolving side brooms, "power-flex lift action" for picking up large, bulky objects, and "Filter-Vac" dust control. Write WAYNE MFG. CO., 1219 E. LEXINGTON ST., POMONA, CALIF.

Push Water Pipe To Install

540 Don't trench and cut through concrete drives, or slice up lawns. Install pipe underground quickly and easily with this new "continuous-stroke" pipe pusher. Only one man is needed to operate the Speed-Thru, and the pusher will penetrate high density formations in record time. The Speed-Thru is operated with a gasoline, electric or truck-powered unit. Write MERCURY HYDRAULICS, INC., 2440 BLAKE ST., DENVER 5, COL.

Stainless Steel Well Points

541 These stainless steel well points, designed for easy connection to 1¼-, 1½- and 2-inch standard pipe, are made with continuous slot openings for maximum inlet area. The V-shaped slots won't clog, and the screen may be acid-treated in place and is not subject to galvanic corrosion. For additional data, write EDWARD E. JOHNSON, INC., 315 N. PIERCE ST., ST. PAUL 4, MINN.

Portable Barricades

542 Easy to assemble, Sentry steel barricades with sign brackets and flags provide adequate protection for both motorists and pedestrians during street repairs. They are made of formed 16-gauge steel, zinc coated and bonderized, reinforced on the ends, and finished with baked enamel. Scotchlite is optional. Write TRAFFIC EQUIPMENT CORP., 2461 S. DAHLIA LANE, DENVER 22, COL.

Mobile RadioTelephone

543 This small, low-power radiotelephone can serve as a base station, mobile unit and mobile public address system. Its range is one to five miles, and the unit operates on six or 12 volts DC, or 117 volts AC. For specific data, write KAAR ENGINEERING CORP., 2900 MIDDLEFIELD RD., PALO ALTO, CALIF.

Makes Refuse Collection Fast and Easy

544 Using the new Hydepak body, refuse collection is transformed into a safe, simple and sanitary operation. This economical unit offers easy loading from both sides, 27,000 pounds of controlled pressure for better compaction, and a special hydraulic lift for dumping. One push button does all the work. Write HYDE CORP., 2936 S. PECAN ST., P. O. BOX 1265, FORT WORTH 1, TEX.

Submersible Water Pumps

545 You can forget about costly, unattractive pump houses when you use a Reda submersible electric pump. These automatic pumps are economical to operate, and assure a large water volume. Capacities range from 5 to over 3,000 gpm, in sizes from ½ to 500 hp. For additional data, write REDA PUMP CO., BARTLESVILLE, OKLA.

Trench Digging and Excavating

546 By equipping a tractor with a Wagner backhoe, your city can make short work of digging water and sewer trenches, and other excavation. A tractor and a Wagner loader will do a fast job of land clearing, excavating, backfilling and landscaping. Get full details on Wagner tractor equipment from WAGNER IRON WORKS, DEPT. 130, 1905 S. 1st ST., MILWAUKEE 1, WIS.

New Adjustable Handle for Overhead Maintenance

547 With this new adjustable-length handle, cities can care for a variety of overhead maintenance jobs, including the removal of street-light bulbs, pruning trees in public parks, and washing windows in public buildings. For a free descriptive catalog, write J. B. SEBRELL CORP., DEPT. AC, 300 S. LOS ANGELES ST., LOS ANGELES 13, CALIF.

Effective Fire-Fighters

548 Equip your city with the best possible fire protection by specifying Mack fire apparatus. This dependable equipment offers the top performance and flexibility needed to meet the demands of modern fire-fighting and traffic conditions. Get full details from MACK MFG. CORP., EMPIRE STATE BLDG., NEW YORK 1, N. Y.

Street-Lighting Brackets

549 Extra strength, minimum pole space, and an attractive design are important features of L-M's new luminaire supports. These brackets are easy to handle, install, and wire, and are available in galvanized steel or aluminum. They come in plain, threaded, or street-ell end styles. Write LINE MATERIAL CO., MILWAUKEE 1, WIS.

Surveyor's Transits

550 Surveyors and city engineers are offered the No. 1-c 6¼-inch transit, constructed of hard bronze throughout, with a solid silver plate graduated to read to a 2-minute accuracy. The Buff No. 1-c and other engineers' transits are described and illustrated in a new booklet from BUFF & BUFF MFG. CO., 329 LAMARTINE ST., JAMAICA PLAIN 30, MASS. Copies on request.

Settling Tank Drive Chains for Water and Sewage Plants

551 In either water or sewage treatment plants, the drive chains of the sludge-collecting mechanisms have to take a great deal of abuse. However, these specially designed chains are tough enough to handle this problem without a whimper. Known as long-pitch pintle chains, they are manufactured of special analysis metals that make them corrosion resistant and long wearing. Get all the details from MOLINE MALLEABLE IRON CO., ST. CHARLES, ILL.

Fast Way to Melt Tar and Asphalt

552 A quick, safe, easy method of melting tar and asphalt for street construction and maintenance is with the new Hauck Speed-Master kettle. Hauck kettles are designed to burn kerosene or bottled gas, and are available in 55- to 330-gallon capacities. They are fully described in literature from HAUCK MFG. CO., 111-121 TENTH ST., BROOKLYN 15, N. Y.

Leaky Reservoirs or Troubled Well Supplies?

553 This company uses unconventional methods to solve water problems in money-saving style. Leaking reservoirs, dropping ground-water supplies are only part of the broad field that our engineers are ready to serve. Troublesome foundations, unstable soils, tunnel problems also respond to their work. For details, write MANU-MINE RESEARCH & DEVELOPMENT CO., READING, PA.

High Speed Spreaders Have Year-Round Use

554 In Spring and Summer, use your Baughman spreader to spread rock chips and gravel for low-cost street construction and maintenance. In Winter, use the unit to spread sand, cinders, salt chips and calcium chloride for efficient ice control. Pull-type and truck-mounted spreaders are available. For information, write BAUGHMAN MFG. CO., 150 SHIPMAN RD., JERSEYVILLE, ILL.

New Sprayer Attachment for Jari Tractors

555 It takes only 40 minutes to spray two acres of lawn with the new XL sprayer. The attachment is designed for Jari "Champion" and "Junior" tractors. It can be set to cover a path up to 14 feet wide. A hand spray nozzle and 25 feet of hose, furnished as standard equipment, may be used on shrubs, bushes and weeds. Write JARI PRODUCTS, INC., DEPT. KP, 2990 S. PILLSBURY AVE., MINNEAPOLIS 8, MINN.

Streets Stay Clean with Swing-Top Receptacles

556 Cleaning city streets is a wasted effort if, minutes later, they are again cluttered with old newspapers, candy wrappers, tissues and other debris. To keep streets clean, place a United waste receptacle at strategic locations. These sanitary, swing-top units are easy to use, and economical to maintain. Get full facts from UNITED METAL CABINET CORP., 14TH & LAUREL STS., POTTSVILLE, PA.

(Please turn to page 36 for more Bulletins)

Rx Making sick wells . . . WELL!

First comes diagnosis. Before the cure the trouble must be known so that proper treatment may be prescribed.

Trained Layne research men, with the help of the latest and best in scientific equipment, find the trouble . . . determine the corrective measures . . . and experts go to work.

Successful? . . . One smaller Southern city saved the cost of a new well at a nominal cost. And that's just one success in a long line of sick wells that have been made well by Layne.

The nearest Layne associate company will be glad to discuss such problems with you—without obligation. It's another Layne service that proves it's always wise first to "ASK THE MAN FROM LAYNE" on any phase of water development or maintenance.

LAYNE
& BOWLER, INC.
MEMPHIS
General Offices and Factory

LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD

Layne

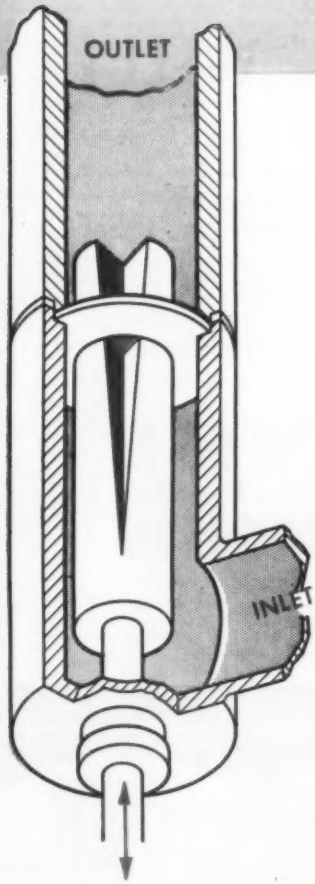
Water Wells • Vertical Turbine Pumps • Water Treatment

THE WALLACE & TIERNAN

V-NOTCH

variable-orifice

. . . a new concept for chlorinator control



The W&T V-notch Variable-Orifice is the heart of a new chlorinator control system. With the system, a constant differential vacuum is maintained across the V-notch Variable-Orifice and the flow of chlorine gas is adjusted by varying the area of the orifice.

The W&T V-notch Variable-Orifice has these features:

- Wide range adjustment of chlorine flow
- Excellent reproducibility of flow by a simple adjustment
- Same % accuracy over entire wide flow range

As can be seen in the diagram, the V-notch Variable-Orifice is formed by a cylindrical plug positioned inside a matched, circular ring. A V-shaped groove is machined along the length of the plug. The groove starts near one end of the plug and gradually enlarges to its maximum width and depth at the other end of the plug. The V-notch Orifice is formed at the intersection of the grooved plug and the matched ring. The orifice area is varied simply and positively by positioning the plug backward or forward inside the fixed ring.

The V-notch Variable-Orifice is just one design feature of the new W&T V-notch line of chlorinators. Get all the facts about the W&T V-notch chlorinators before you buy chlorination equipment.

ee W&T V-notch Chlorinators at the
AWWA Convention, St. Louis, May 6-11.

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

S-107

What's Your Problem?

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

To THE AMERICAN CITY's Catalog Supply Department:

Please send me further information on products described in "Purchasing News" section beginning on page 239, as circled below:

927	931	935	939	943	947	951	955	959	963
928	932	936	940	944	948	952	956	960	964
929	933	937	941	945	949	953	957	961	965
930	934	938	942	946	950	954	958	962	966
									967

I would also like to receive manufacturers' booklets on .....

.....

.....

.....

Name: (Please Print) .....

Title: .....

Address: .....

..... 5-56

A Listing of Your Business Connection is Important

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD

FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE

470 FOURTH AVENUE

NEW YORK 16, N. Y.

Stuck?

Make use of these convenient Business Reply Cards. A quick, easy way to get full details on products and services mentioned or advertised in this issue.

To THE AMERICAN CITY's Catalog Supply Department:
Please send literature on items numbered as follows, starting on Page 28:

497	504	511	518	525	532	539	546	553	560	567	574	581	588
498	505	512	519	526	533	540	547	554	561	568	575	582	589
499	506	513	520	527	534	541	548	555	562	569	576	583	590
500	507	514	521	528	535	542	549	556	563	570	577	584	591
501	508	515	522	529	536	543	550	557	564	571	578	585	592
502	509	516	523	530	537	544	551	558	565	572	579	586	593
503	510	517	524	531	538	545	552	559	566	573	580	587	

I would also like to receive manufacturers' booklets on.....

.....

.....

.....

Name: (Please Print).....

Title: .....

Address: .....

..... 5-56

A Listing of Your Business Connection is Important

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 FOURTH AVENUE
NEW YORK 16, N. Y.

RUGGED WAGNER EQUIPMENT

makes a tractor your most versatile and inexpensive construction tool

Now a tractor can be the most important single tool on your construction jobs. When it's teamed up with rugged Wagner tractor equipment, nothing else can do so many jobs so well.

By equipping a tractor with a Wagner Backhoe you make short work of digging footings, sewer, gas and power trenches and septic tanks. Likewise a tractor and a Wagner loader do a faster, better job of land clearing, excavating, backfilling and landscaping. And all the while you'll be speeding construction, saving man-hours and increasing profits.

Check with your nearby Wagner dealer to see how Wagner tractor equipment can cut time and labor costs on your construction jobs.

waqner
TRACTOR EQUIPMENT

WAGNER IRON WORKS, | 1905 South 1st St., Milwaukee 1, Wis. | Dept. 130

Send me more information on Wagner Tractor Equipment for a ..... (make) ..... tractor.

NAME .....

COMPANY .....

ADDRESS .....

CITY ..... STATE .....

"WAGNER BUILT" MEANS "BETTER BUILT" FOR OVER 105 YEARS

Close Quarters?

Get a Hydrohoe

When close-quarter digging gets you in a corner, you can depend on a Bucyrus-Erie Hydrohoe to get you out — and at a saving in time and money.

This compact all-hydraulic truck-hoe with its extremely short tail swing not only speeds easy-to-get-at digging but also squeezes into narrow passageways, edges close to obstructions and moves dirt out in a hurry. You can trench out water and sewer lines, dig hydrant pits and manholes, excavate for catch basins — handle these and other jobs in locations where ordinary equipment just can't maneuver properly.

Extra advantages in close-quarter digging are provided by the Hydrohoe's telescoping boom and wrist-action dipper. Merely by extending and retracting the boom, the operator can regulate his digging ranges, permitting him to work in extremely close quarters. By working wrist action along with boom telescope, he can pry out objects obstructing digging . . . can work effectively around cross pipes.

Standard Hydrohoe dipper is 18" wide. Available as extra equipment are a narrow-type dipper, 12" wide, and wide-type dippers up to 60" wide, plus a special 20" utilities dipper designed to dig shorter trenches with greater depth than length. Optional remote control permits driving truck right from the Hydrohoe operating cab. Your Bucyrus-Erie distributor will be happy to arrange a demonstration on your job. 116H56

BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

BUCYRUS ERIE HYDROCRANE BUCYRUS ERIE HYDROHOE

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 34

Better, Low-Cost Sewage Ejection

557 Now you can get rid of complex sewage piping and, at the same time, eliminate screens, impellers, and shredders, with economical Blackburn-Smith sewage ejectors. Available in single and twin units, these ejectors will lift sewage 150 feet at 30 to 500 gpm. They are described in *Engineering Bulletin S50.* Write BLACKBURN-SMITH MFG. CO., INC., 57 GARDEN ST., HOBOKEN, N. J.

Street-Lighting Standards of Prestressed Concrete

558 It's fast and easy to install new Hy-Lite prestressed concrete lighting standards. All you do is drill, set, and tamp the standard in place. No footings are required. Low-cost Hy-Lite standards feature an attractive granite finish. They are discussed in *Catalog No. 300.* Write AMERICAN CONCRETE CORP., 5092 N. KIMBERLY AVE., CHICAGO 30, ILL.

Water-Gas-Sewer Pipeline Equipment

559 Diaphragm pumps, pipe cutters, melting furnaces and joint runners are featured in the new Pollard catalog of pipeline equipment. Also discussed are caulking tools, manhole cushions, sewer connections, and the dependable M-Scope pipe finder. For your copy of *Catalog 26,* write JOSEPH G. POLLARD CO., INC., NEW HYDE PARK, N. Y.

A Truck for Every Maintenance Job

560 Street construction and maintenance work is greatly simplified when you're using an FWD truck. These versatile vehicles may be used to grade tough roadbeds, haul gravel and other surfacing materials, and plow the deepest snows. Equipped with under body blades, they are ideal for light snow and ice control. Get full details from THE FOUR WHEEL DRIVE AUTO CO., CLINTONVILLE, WIS.

About Water Softeners

561 All the important facts a city engineer should know about water softeners and filters is contained in this comprehensive new manual prepared by BRUNER CORP., MILWAUKEE, WIS. The 85-page book covers heavy-duty industrial and home water softeners and chemical feed pumps. It features complete fill-in type specifications of every unit including single valve, automatic or fully automatic types. Requests should be made on official city letterheads.

One Drill Has Many Uses

562 Easily mounted on any type truck or tractor with power take-off, the new Model B-40 drill will handle vertical drilling jobs, all-angle drilling jobs, and horizontal underground boring. The portable unit will core, auger, and drill utility post holes. It is ideal for installing water, gas and power lines under streets and highways. For additional details, write MOBILE DRILLING, INC., 960 N. PENNSYLVANIA ST., INDIANAPOLIS 4, IND.

(See p. 38 for more Bulletins)

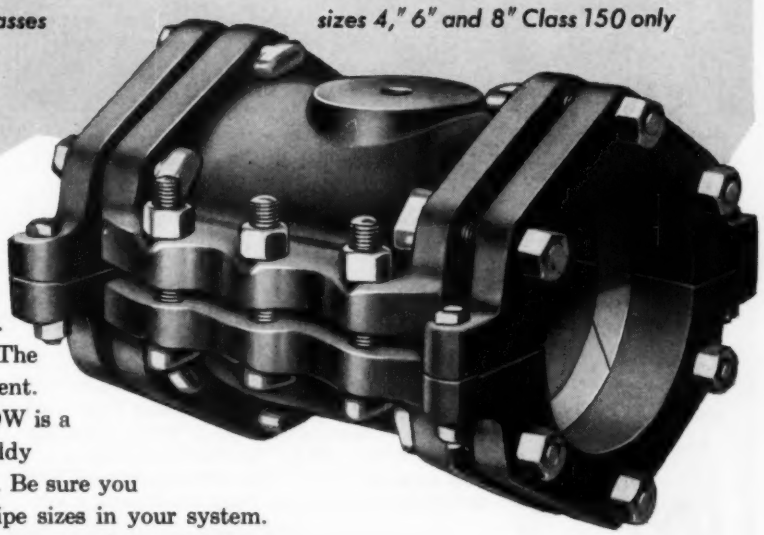
NOW from EDDY...

Mechanical Joint Split Sleeves

for repairing water mains...

CAST IRON MAINS
sizes 3" through 16" All Classes

ASBESTOS-CEMENT
sizes 4," 6" and 8" Class 150 only



Here's the fastest, most economical way to repair damaged water mains. Installation is a matter of minutes. The repair you make is positive, permanent. This is a reminder that RIGHT NOW is a good time to check your stock of Eddy mechanical joint split repair sleeves. Be sure you have some to match each of the pipe sizes in your system. Remember: Eddy repair sleeves come complete, ready for instant use, each with detailed instructions for installing . . . easily, quickly and with no tools other than a ratchet wrench. NOW is the time to order . . . or to mail the coupon if you'd like more information. No obligation, naturally.

Mail Coupon Now
for full facts

EDDY VALVE COMPANY

WATERFORD, NEW YORK

Eddy Valve Company
Waterford, N. Y.

Please send me complete information on Eddy Mechanical Joint Split Sleeves.
(please check which)

For: ☐ Cast iron ☐ Asbestos-cement

Name_____

Address_____

City_____ Zone____ State____

ONE GRAVELY TRACTOR
Powers 3 Mowing Tools!

Cut mowing costs—make only ONE investment in the power unit for ground maintenance tools. 5-HP Gravely gives you your choice—from 21 different tools—including three mowers!

REEL MOWER for fine lawns, quickly converted to 72" Gang Mower by attaching Gang Units. Add Sulky, cover more ground faster with less fatigue. ROTARY MOWER for lawn and weed cutting . . . with optional LEAF MULCHER assembly. SICKLE MOWER for tough weed and brush cutting jobs!

And remember, with Gravely, you have *twice* the power of the usual power mower!

PLUS 3 SNOW REMOVAL TOOLS

Snowblower, Snowplow, and Power Brush attachments make snow removal fast and easy . . . you change from job to job by removing and replacing only four bolts . . . suit the tool to the job or season in minutes!

PROOF...BY FREE DEMONSTRATION!

Yes, cut costs . . . and we will prove how you can . . . how you get more for your money when you get Gravely! A FREE demonstration is yours on request . . . *at no obligation.* Or write for "Power Vs. Drudgery" catalog, FREE!

Push-Button Starter Optional

GRAVELY TRACTORS, INC.
BOX 73 DUNBAR, W. VA.

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 34

New Ideas in Refuse Trucks

563 A practical answer to your city's refuse collection and disposal problems is offered by Pak-Mor refuse bodies, which handle big collections economically, resulting in fewer trips to the dump. The trailer-type units are available in 13,- 16-, 20- and 24-cubic-yard capacities. Literature may be obtained from PAK-MOR MFG. CO., LOOP 13 at ROOSEVELT AVE., SAN ANTONIO, TEX.

What Size Portable Generator?

564 This informative folder not only presents a line of small, portable power plants, but also shows how to choose the size actually needed. A table is used to show the wattage needed to run 18 different power tools. The generators are DC and AC, and range from 750 to 5,000 watts. Write MASTER VIBRATOR CO., 265 STANLEY AVE., DAYTON, OHIO.

Speeds Repairs of Curbs and Sidewalks

565 Repairing city curbs and sidewalks is easy and economical when you use Airplaco concrete gunning equipment. The company's full line, including the Nucretor and Bondactor, is fully described in a new, 16-page catalog. Also featured is a portable concrete gunning rig, ideal for any concrete construction, maintenance or restoration job. Write AIR PLACEMENT EQUIPMENT CO., 1009-11 W. 24th ST., KANSAS CITY 8, MO.

Low-Cost Protection for Citizen's Ballots

566 As each ballot is deposited in a Perfection balloting machine, it is legally endorsed with the name of the voting district—proof that it was actually cast at that particular election. The machine assures one ballot per voter. Further, it counts the ballots as endorsed. For a descriptive circular and prices, write S. RALPH CROSS & SONS, INC., DEPT. A, 120 MAYFIELD ST., WORCESTER 2, MASS.

Savings in Street Maintenance Costs

567 Oscillating wheels, a torque converter drive and a full-reversing type transmission have been combined in the Bros self-propelled roller, turning street maintenance into a fast, efficient and low-cost operation. The unit features a 50-hp engine, hydraulic steering, and a speed range from 0 to 18 mph. For details, write WM. BROS BOILER & MFG. CO., ROAD MACHINERY DIV., 1057 TENTH AVE., SE., MINNEAPOLIS 14, MINN.

Elevated Water Tanks and Standpipes

568 You don't have to worry about water shortages when water is safely stored in Darby-built elevated tanks and standpipes. Darby tanks range in diameter from 18 feet to 78 feet, and will hold from 25,000 to 1,000,000 gallons of water. For engineering information covering specifications, design and cost, write THE DARBY CORP., KANSAS CITY, KANS.

(See p. 42 for more Bulletins)

F.M.D. Tractor-Loader handles up to ⅝-yard loads, priced hundreds of dollars less than other diesel rigs

F.M.D. Tractor and Digger
cuts costs of laterals, footings, service lines. Fast, positive hydraulic control. Fordson Major Diesel equipped with both rear-mounted backhoe and front-mounted loader makes an efficient, low-cost unit for excavating, loading, backfilling.

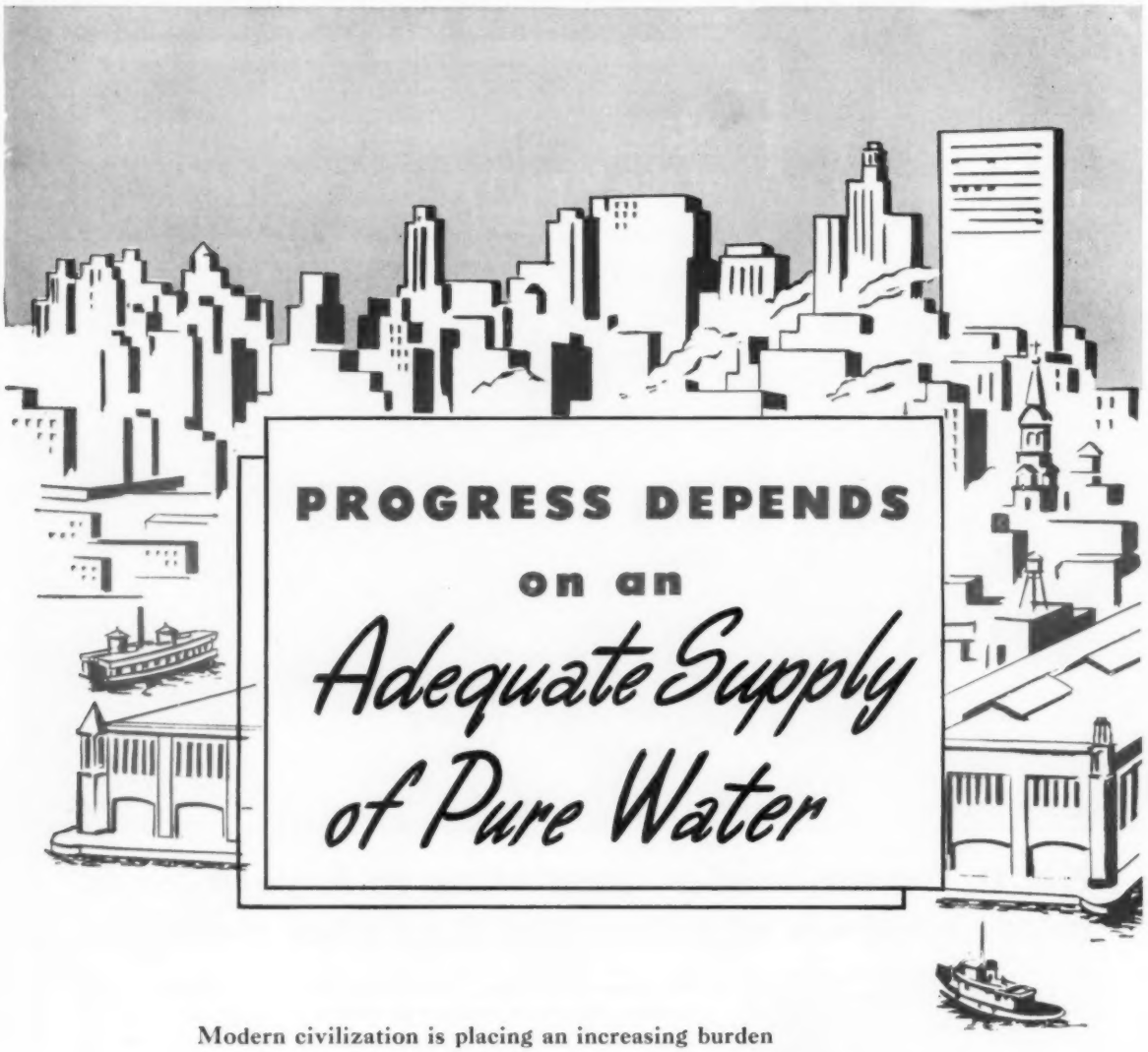
The powerful Fordson Major Diesel and new "Step-On" Loader handle production loading at lowest cost. See for yourself!

Check workability—One easy step puts the operator into the seat, ready to work, fast. At his command are scientifically placed levers for instant hydraulic control of ⅝-yard or ½-yard heavy-duty buckets. A touch of a lever and double-acting cylinders on lift arms and bucket deliver positive down pressure . . . over two tons of breakaway power . . . 2000 lbs. load capacity at full lift. Tilt back crowds maximum loads into the bucket. There's less spillage on the haul . . . parallel linkage of lift arms keeps bucket level, makes loader adaptable for fork lift work. For faster, more efficient truck loading, there's ample lift and reach to work from one side and still distribute loads evenly in high-bodied trucks.

Check price—You'll find the F.M.D. Tractor-Loader priced hundreds of dollars less than other diesels with comparable power and equipment. You also save on operating and maintenance costs. To get the complete story on this low-cost production loading team, call your Ford Tractor and Equipment Dealer, or write to the address below.

Low cost
FORDSON MAJOR
Diesel

TRACTOR AND IMPLEMENT DIVISION
FORD MOTOR COMPANY
Birmingham, Michigan

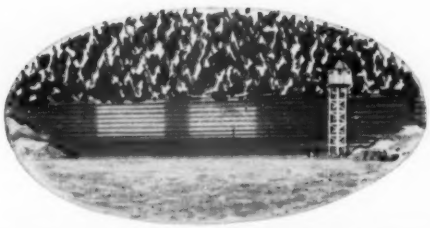


Modern civilization is placing an increasing burden
on those responsible for supplying greater and greater
quantities of pure water for home, recreation, and industry.

The dependability of the mechanical equipment charged with
the responsibility of unfailing operation is a consideration
which continues to pay big dividends over the years.

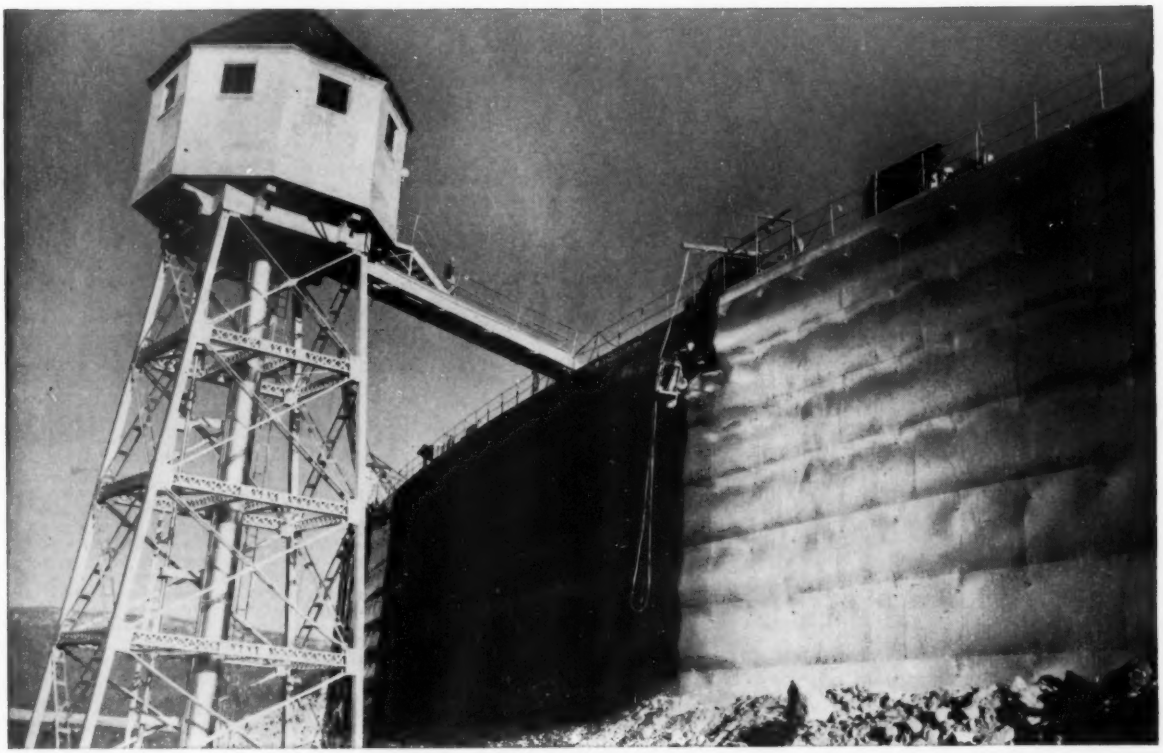
You can depend on Roberts Filter.

MECHANICAL EQUIPMENT
BY
ROBERTS FILTER MFG. CO.
DARBY, PENNA.



New TARSET®

selected for Maximum Protection of Big Dam Facing



THE Huntington Lake power dams in Central California have performed yeoman service since their construction in 1917. But 38 winters in the High Sierra is a long time . . . long enough for the annual freezing and thawing cycles to react on the concrete surfaces of the dams' faces. Southern California Edison Company therefore took important maintenance measures last summer.

To provide maximum protection against corrosion, welded steel plates—behind which was poured a six-inch minimum thickness of concrete—were installed on the upstream faces of the two dams. The steel plates were then sandblasted and given a protective coating of Pitt Chem "Tarset," the new coal tar-epoxy resin coating.

Tarset, the toughest, hardest coating of its kind ever developed from coal tar, is being called upon to solve all sorts of corrosion problems formerly classified as "impossible." Tests show that Pitt Chem Tarset can stop corrosion caused by atmospheric exposure . . . sour crude petroleum and petroleum products . . . salts and acids. And it actually becomes harder at temperatures as high as 400°F!

What can Tarset do for you? Outline your corrosion problem—either by phone or letter—and we'll gladly help you solve it.

Send for Descriptive Booklet on TARSET today

Free booklet tells how to use amazing new Tarset to reduce costly corrosion. Gives detailed description of Tarset's specifications, properties and application characteristics. Write for *your* copy today!

WSW 6064

COAL CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

Use Northern Gravel for Rapid Sand Filter

The new Northeast Station in the City of Detroit, which is scheduled for completion in 1956, is one of the major projects included in the water department's expansion program. The Northern Gravel Company furnished 120 carloads of filtering materials for the 48 rapid sand filters incorporated in this plant.

Filter Sand Specifications

are carefully laid out. The Effective Sizes and Unifomity coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long years of research and experience.

The Northern Gravel Company is equipped to give you prompt shipment whether it be one bag or many carloads, exact to specifications. Filter sand can be furnished with any effective size between 0.35 MM and 1.20 MM.

Chemical Quality

of the filter sand is also important. It must be hard, not smooth, and free of soluble particles. This requires perfect washing and grading facilities. We have every modern device for washing, drying, screening and testing.

Filter Gravel

supporting the Filter Sand Bed, must be in turn, properly graded to sizes calculated to support the Filter Sand, and be relatively hard, round and resistant to solution.

Northern Gravel has no equal in facilities and our reserves of both sand and gravel are inexhaustible. Northern Gravel Company has been in business over 40 years. We guarantee uniformity of products and our records enable us to duplicate your requirements on short notice. Our location is central and we have commodity rates in every direction.

Northern Gravel Company

Box 307 **Muscatine, Iowa** Phone: AMherst 3-2711

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 34

Stops Corrosion

569 Is the equipment in your municipal sewage treatment plant protected against the damaging effects of corrosion? If not, investigate the advantages offered by Pitt Chem cold applied tar base coatings. These thick, coal-tar coatings stop corrosion before it starts. They are easily applied by brush, roller or spray. Write PITTSBURGH COKE & CHEMICAL CO., GRANT BLDG., PITTSBURGH 19, PA.

Improved Street Lighting with Mercury Lamps

570 High-intensity Westinghouse mercury lamps are designed for dependable performance in all kinds of weather. The new "Weather Duty" model can be burned outdoors, unprotected in rain, snow or sleet, with no risk of cracking. It can be burned indoors, too, in ventilated fixtures, with no danger of shattering. For free descriptive literature, write WESTINGHOUSE LAMP DIV., DEPT. AC-3, BLOOMFIELD, N. J.

Save Money Rebuilding Old Streets

571 Now you can do something about rough, potholed streets without stretching your municipal budget. You simply rebuild them from in-place materials, using the new Athey method. Using an Athey force-feed loader—portable breaker team, you save the cost of new aggregate, eliminate the expense of hauling old material away, and save on new oil, too. Write ATHEY PRODUCTS CORP., 5631 W. 65th ST., CHICAGO 38, ILL.

Stop Ugly Smoke

572 The first step in ending air-pollution problems in your municipality is to make sure you get an instant warning of illegal smoke. You can do this with new Smoke-Eye alarms. These economical, easy-to-install units may be used for coal or oil furnaces. For *Brochure "Q-4,"* write STANDARD INSTRUMENT CORP., DIV. of HEAT TIMER CORP., 657 BROADWAY, NEW YORK 12, N. Y.

New ¾-Yard Excavator

573 A new ¾-cubic-yard excavator, Model 305, has a rated lift crane capacity of 25 tons on a truck chassis, and 15 tons on crawler mounting, and features the same design and safety features as larger Koehring machines. The efficient unit can be equipped with a full complement of attachments, increasing its usefulness on a variety of city jobs. It is available from KOEHRING CO., MILWAUKEE 16, WIS.

Passenger Conveyors

574 Passenger conveyor systems are presented in an 8-page bulletin featuring photographs of existing installations and application data. It includes consideration of the Stephens-Adamson Goodyear Carveyor system which proposes to handle passengers in small cars, riding on belts, at speeds up to and above 15 mph. For your copy of the *S-A Speedwalk Bulletin*, write STEPHENS-ADAMSON MFG. CO., AURORA, ILL.

(See p. 44 for more Bulletins)

"Has the power and weight we need for wide variety of work . . . including our 80-acre farm," says Earl Nevins, Superintendent for the City of Clovis, California.

NEW! International® 300 Utility tractor

now with POWER STEERING

Change tractor speed ON THE GO with revolutionary Torque Amplifier drive—while keeping pto speed constant with rotary (illustrated), side or rear-mounted cutter bar, or hammer-knife mower! TA provides 10 forward speeds.

Steer single-handed, maneuver in cramped quarters . . . keep the other hand free to control equipment! The new International 300 Utility with power steering gives the operator finger-ease control of the wheel, even with heaped half-yard bucket on a heavy-duty loader. He can load, doze, backfill, grade and level *on the go.* With up to 1,000 pounds greater built-in weight for traction and stamina, 300 Utility users report they *move up to 25 per cent more dirt* in a day than with lighter-weight outfits.

IH power steering blocks kickbacks from the front wheels, yet allows normal self-recovery. It is powered from the tractor's regular Hydra-Touch system, saving the cost of a separate pump. Get the "feel of the wheel" at your very first opportunity!

Phone your IH Dealer for a demonstration . . . look in the classified directory. For free specification folder, write International Harvester Company, Dept. AC-5, P. O. Box 7333, Chicago 80, Illinois.

See Your

INTERNATIONAL HARVESTER Dealer

International Harvester products pay for themselves in use—McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Crawler and Utility Tractors and Power Units—General Office, Chicago 1, Illinois

ONLY $11,545* buys a BANTAM self-propelled

the traveling one-man rig that lifts, digs, loads, stockpiles, erects, trenches

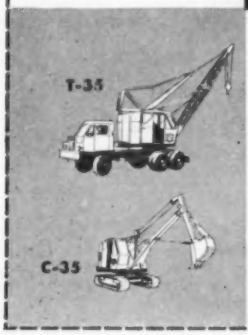
Here's one of the greatest cost-cutting and job-speeding machines ever developed for all-round city work! Amazingly low-priced, the new BANTAM Self-Propelled travels under its own power (or is easily towed) to wherever the job may be . . . works in cramped quarters . . . handles a wide range of work with just *one* operator! Budget-conscious city officials buy the BANTAM Self-Propelled to handle new line trenching . . . emergency line excavations . . . handling and lowering pipe . . . servicing stockpiles . . . bridge repairs . . . loading and unloading materials, etc.

The BANTAM CR-35 has independent forward and reverse travel . . . 360° swing . . . power *up* and power controlled lowering for accurate, safe handling . . . all-vision, all-weather cab . . . hydraulic precision steering. Works with Schield Bantam's nine fast-change attachments. Lifts up to 12,000 lb. . . . loads up to 100 cu. yd. per hour as shovel.

*As shown complete with crane boom, outriggers, hook block (less boom safety stops) f.o.b. Waverly, Iowa.

Try it yourself . . . call your BANTAM distributor for a demonstration.

SCHIELD Bantam Co.



Schield Bantam Co. AC-69
234 Park Street
Waverly, Iowa, U.S.A.

Please send me detailed bulletin on BANTAM Self-Propelled.

☐ Also carrier mounted. ☐ Also crawler mounted.

Name_____

Title_____

Address_____

City_____ State_____

WORLD'S LARGEST PRODUCER OF TRUCK CRANES AND EXCAVATORS

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 34

Your City Needs This Machine

575 In addition to handling all of your sanitary landfill operations, the D Tournapull may be used to haul fill to low spots in roadways, cut drainage ditches, and landscape city parks. The machine will travel anywhere in the community quickly, and without special equipment to load and haul. It is described in literature from LeTOURNEAU-WESTINGHOUSE CO., PEORIA, ILL.

Open Steel Flooring and Stair Treads

576 Three important points to look for when choosing flooring and stair treads for water, sewage or power plants are strength, safety, and ease of maintenance. These advantages have been combined in efficient Bates grates. Bates grates use fillet-welded hex cross bars, enabling them to carry greater loads. They are described in *Catalog No. 520*, from WALTER BATES CO., INC., JOLIET, ILL.

Mist Sprayer Fights Flies and Mosquitoes

577 Use the new John Bean Pestaire in parks, playgrounds and golf courses, and around schools and hospitals, to combat flies and mosquitoes. The Pestaire is available for pick-up truck mounting, or as an independent, 2-wheel trailer unit. It will deliver 11,000 cubic feet of air per minute at 85-mph velocity. For *Catalog L-1145*, write JOHN BEAN DIV., FOOD MACHINERY AND CHEMICAL CORP., LANSING 4, MICH.

Protects Against Power Failure

578 Instant power for emergency and stand-by service is provided by Murphy diesel generator sets, diesel and dual-fuel engines. Engines and power units ranging from 90 to 264 hp deliver mechanical power, and generator sets from 60 to 165 KW are available for electric power. For *Bulletin 125*, write MURPHY DIESEL CO., 5317 W. BURNHAM ST., MILWAUKEE 14, WIS.

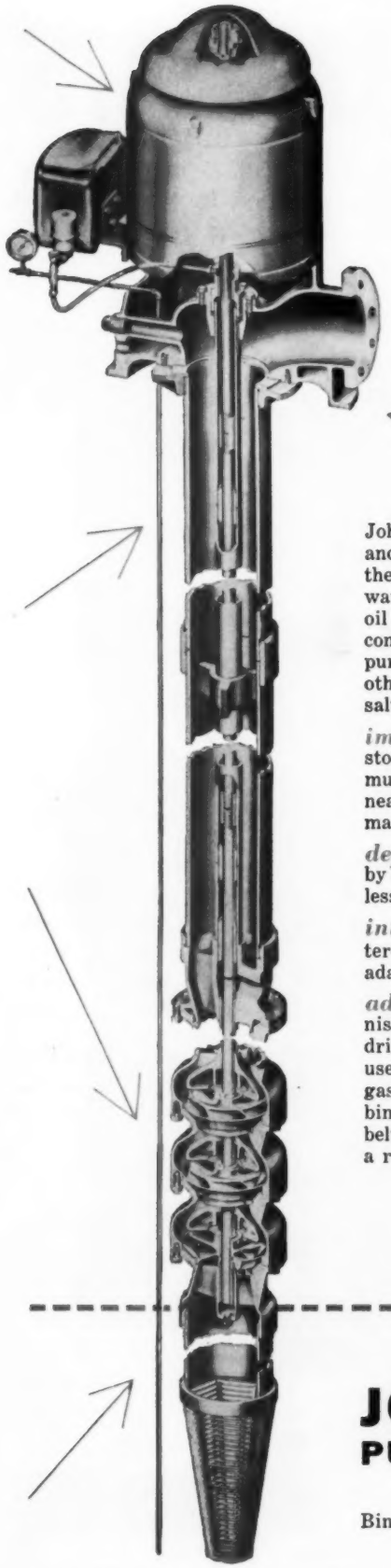
Lubricating Heavy-Duty Municipal Equipment

579 *Lubrication*, Vol. 42, No. 3, a technical publication devoted to the selection and use of lubricants for heavy construction equipment, is offered by THE TEXAS CO., 135 E. 42ND ST., NEW YORK, N. Y. The booklet advances a simplified lubrication plan designed to cut operating costs and extend equipment life. Storage and handling problems are discussed, as well as a preventive maintenance program. Copies on request.

Water Meters

580 All internal parts of American water meters are completely interchangeable, assuring fast, low-cost maintenance. Old meters can be modernized by substituting late model parts. In this way your American water meter is always up-to-date in performance and accuracy. Get complete information from BUFFALO METER CO., 2902 MAIN ST., BUFFALO 14, N. Y.

(See p. 48 for more Bulletins)



ANY WAY YOU LOOK AT IT—

you can't beat a dependable

JOHNSTON Vertical Turbine PUMP

Johnston Pumps have an enviable record of field-proven performance, operating under widely varying conditions. The versatility of the Johnston Line makes these pumps ideally suited for primary water supply from wells, lakes or rivers...for domestic supply in oil field camps...for water flooding work...for cooling towers, condenser pumping, booster pumps, transfer pumps, circulation pumps, sump pumps...for handling water volatile fluids and many other liquids such as sulphite liquor, sulphuric acid, chlorine, brine, salt water, and caustic liquids.

improved, scientific design The scientific design of Johnston Pumps has been tested under every type of industrial, municipal, and agricultural condition throughout the world for nearly 50 years. Constant research and design improvements have made these good pumps even better.

dependable, low cost operation Johnston Pumps are built by master craftsmen of the best materials to stand up longer with less maintenance and power costs.

interchangeable parts Simplicity of construction and interchangeable parts make Johnston Pumps highly flexible and adaptable to many types of pumping conditions.

adaptable to any power source Johnston Pumps are furnished for use with any type of power. Integral electric motor drives, right angle gear drives, and flat or V-belt pulleys may be used. Either belt or gear drives are ideal for gasoline, diesel, or gas engines. When a continuous water supply is essential, a combination of an electric motor with either a right angle gear or belt drive will give positive insurance against a loss of water as a result of power failure.

It will pay you to learn more about dependable Johnston Pumps. Fill in and mail coupon today.

JOHNSTON VERTICAL PUMPS

JOHNSTON PUMP COMPANY

Founded in 1909

Bin "K," Pasadena 15, California

AC-5A

☐ Please Send Bulletin

☐ Have Representative Call

Name_____

Address_____

City_____ Zone____ State_____

OUR FUTURE IS (and in your

MODERNIZED **cast iron**

IN THE SKIES... hands, too)

To keep pace with America's constantly increasing demand for water, you need the help of the elements. And the public.

We can lend a hand there.

Our national advertising stresses advance planning of water facilities . . . warns millions of Americans—homeowners, apartment dwellers, industrialists about waste, pollution, the need for efficient water systems. It points out the need for new water sources, adequate treatment and distribution, realistic water rates, far-sighted water legislation . . . all the facts the public must know to cooperate intelligently with you and your fellow water officials in your difficult job of keeping America plentifully supplied with water—now and in the future.

CAST IRON PIPE. Serves for Centuries!

For over 70 public utilities in the United States and Canada, cast iron mains laid over a century ago are still serving dependably. This long, trouble-free service means lower maintenance costs . . . fewer tax dollars expended . . . fewer headaches for the waterworks officials who specify cast iron.

And today, modernized cast iron pipe, centrifugally cast, is even more rugged, uniform, durable. When needed, it's available with cement-lining to assure sustained carrying capacity throughout its generations of service.

The next time you plan extensions to your distribution system remember, cast iron pipe means the ultimate in long term reliability and economy.

Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Ave., Chicago 3, Illinois.

This rugged old cast iron water main, still serving and saving tax dollars for the citizens of *Detroit, Michigan,* is now in its 115th year of dependable service.

CAST Q IRON

The Q-Check stencilled on pipe is the Registered Service Mark of the Cast Iron Pipe Research Association.

pipe FOR MODERN WATER WORKS

SAVE

UP TO 75%

ON YOUR COST OF LOADING AND HAULING BRUSH!

In actual service, rugged ASPLUNDH CHIPPERS eliminate 3 out of 4 truckloads of brush to the disposal area. (*1 truckload of chips equals at least 4 of brush*).

And chips can be a valuable by-product. Use them for mulching, shrub beds, erosion control, walks, and cushion material in playground areas.

An ASPLUNDH CHIPPER can help you in many *ways. For the whole story, clip and mail this coupon,* today.

ASPLUNDH CHIPPER COMPANY
505 York Road, Jenkintown, Pa. (*Dept. C*)

Please send me FREE Chipper Booklet at once:

NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

BY ACTUAL TEST THE FASTEST CHIPPER MADE

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 34

Off-Street Parking Without Attendants

581 You don't have to man public parking lots with attendants when you use Parcoa automatic parking controls. Parcoa offers you a choice of coded "card-keys," coins, tokens or any combination of these. For a discussion of this economical method of off-street parking, write PARCOA, DIVISION of JOHNSON FARE BOX CO., 4619 N. RAVENSWOOD AVE., CHICAGO 40, ILL.

For Highly Reflective Traffic Lines

582 Whether your line marking requirements call for glass beads for drop-on applications or for the premixed product, Flex-O-Lite will meet your needs. These reflective glass beads are lighter by day, and brighter by night. For a free specifications booklet and prices, write FLEX-O-LITE MFG. CORP., DEPT. 2, 8301 FLEX-O-LITE DRIVE, P. O. BOX 3066, ST. LOUIS 23, MO.

Digs More Trench at Less Cost

583 Working on a water line contract in the Belshire Subdivision, Nashville, Tenn., a Model 95 "Baby Digger" averaged 3,500 feet per day, cutting four miles of trench, 22 inches wide and 36 inches deep, in curving roadways. This efficient machine offers better operator visibility and conveniently located controls. It is fully described in literature from THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO.

Paints Straight, Clean Centerlines

584 A Mark-Rite line marking machine will paint within ⅛-inch alongside fixed objects, and will paint crosswalks to within three inches of the curb. The unit's vertical paint tank is quickly removed for easy cleaning. A quick-release tank cover assures rapid reloading. Write UNIMASCO, INC., 424 W. REDONDO BEACH BLVD., GARDENA, CALIF.

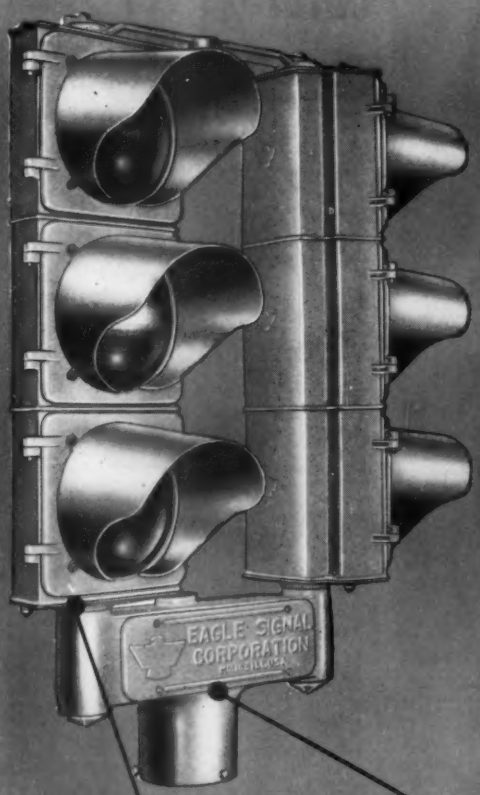
Cleans Clogged Drains

585 It's easy to clean out clogged toilets, wash basins and floor drains, up to 100 feet long, when you use the new Miller Rod House. All you do is turn the Speed Handle, and the rod is whirled down into the pipe, clearing away rags, scale, sand, grease and other obstructions. A complete description of the Rod House is available from MILLER SEWER ROD CO., 4640 NORTH CENTRAL, CHICAGO 30, ILL.

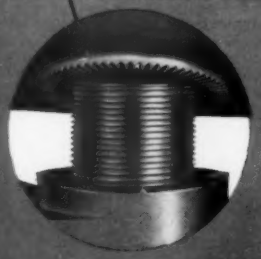
Spreads Composts Quickly

586 These new lawn distributors for parks, lawns and golf courses feature a patented "slots-in-hopper" design for spreading black dirt, dry humus, peat moss and other composts. The new design provides about eight square inches of hopper bottom openings through which the material may flow. Get full details from MASTERS PLANTER CO., P. O. BOX 621, BENTON HARBOR, MICH.

(See p. 50 for more Bulletins)



EAGLE S23CTCH SENTRY
TWO-WAY TRAFFIC SIGNAL WITH
KING SIZE TERMINAL COMPARTMENT



SERRATION POSITION LOCKING FEATURE

Neither wind nor pranksters can turn signal after once locked into position. 72 fine teeth or serrations are integrally cast into top and bottom of signal face that fits snugly into 4 notches on terminal bracket to assure positive locking. Signal can be locked in 5 degree increments to point in any direction.

new

EAGLE
SENTRY

TRAFFIC SIGNAL
with new horizontal
terminal compartment

Here is a traffic signal of smart, modern appearance that includes many advantageous construction and design features. New offset construction assures greater stability and compactness — yet lighter weight than conventional signals of curved or multi-surface design. The EAGLE SENTRY Traffic Signal can be locked into any position when used with post top terminal compartment bracket (as shown) or with other serrated brackets.

EAGLE UK 823
TWO-WAY TERMINAL COMPARTMENT

Eagle's NEW post top horizontal terminal compartment bracket for two or three way signals, provides quick easy access to all signal wires. Wide opening gives ample room for tools to reach all twelve terminals.

MAIL COUPON TODAY

EAGLE

EAGLE SIGNAL CORPORATION
Municipal Division
Moline, Illinois

Eagle equipment saves lives . . . saves time

EAGLE SIGNAL CORPORATION
Municipal Division, Dept. AC-556
MOLINE, ILLINOIS

Please send free Bulletin A10-1 containing complete data on Eagle Sentry Traffic Signal

NAME AND TITLE

ORGANIZATION

FULL ADDRESS

Ferric salts have proven their ability to coagulate waters of widely varying turbidity. Spring rains increase turbidity for those who must treat surface supplies. The use of Ferric-Floc will simplify the treatment of this high turbidity. Ferri-Floc is partially hydrated Ferric Sulfate that has the ability to convert these high turbidities without radical dosage changes.

- **Excellent taste and odor control**
- **Increased filter runs**
- **Coagulation over wide pH ranges**
- **Rapid floc formation**
- **Bacteria removal**
- **Turbidity removal**
- **Ease of Operation**
- **Manganese and Silical removal**
- **Color removal**
- **Economy**

WATER TREATMENT

Efficient coagulation of surface or well waters. Aids taste and odor control—Effective in lime soda-ash softening. Adaptable to treatment of nearly all industrial waters.

SEWAGE TREATMENT

Ferri-Floc coagulates water and wastes over wide pH ranges—It provides efficient operation regardless of rapid variations of raw sewage, and is effective conditioning sludge prior to vacuum filtration or drying on sand beds.

SULFUR DIOXIDE HIGHEST QUALITY SO_2

COPPER SULFATE

SULFUR DIOXIDE

SULFUR DIOXIDE is effectively used for dechlorination in water treatment and to remove objectionable odors remaining after purification.

COPPER SULFATE

COPPER SULFATE will control about 90% of the microorganisms normally encountered in water treatment more economically than any other chemical.

FREE BOOKLET

Let us send you without charge, a 38 page booklet that deals specifically with all phases of coagulation—just send us a postal card.

TENNESSEE TC CORPORATION

TENNESSEE CORPORATION

617-29 Grant Building, Atlanta, Georgia

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 34

Finished Curb Without Forms

587 Cities can lay up to 1,800 feet of finished curb per day, without using forms, with a Stephens-Canfield automatic curber. Only three men are needed to operate the machine. They simply mark the location, start the motor and fill the hopper. Compaction pressure does the rest. For full details and prices, write E. L. HARDIN ASSOCIATES, INC., SALISBURY, N. C.

One Machine Digs, Trenches, and Loads

588 The ½-yard Oliver 88 Hydro-Trencher, a one-man machine that will handle all of your city's excavating and trenching jobs, is offered by THE OLIVER CORP., 400 W. MADISON ST., CHICAGO 6, ILL. The rubber-tired machine travels over busy streets, and works well in close quarters. It is equipped for fast, continuous ditching or delicate line repairs. Write for details.

Stationary Fire Pumps

589 Descriptions of underwriters' approved fire pumps with selection charts and specifications, are features of this new 36-page fire pump bulletin. For your copy of *Bulletin No. B-1500*, write PEERLESS PUMP DIVISION, FOOD MACHINERY AND CHEMICAL CORP., 301 WEST AVE. 26, LOS ANGELES 3, CALIF.

Cedar Lighting Poles

590 The oil in red cedar poles is ten times as toxic as creosote. Lighting standards installed on New York parkways 25 years ago, are in good condition today. In addition to being decorative, Western red cedar poles need no painting. For dimensions and details of construction, write THE RYTHER-PURDY LUMBER CO., 503 TIFFANY ST., NEW YORK 59, N. Y.

Water Meters

591 The advantages of accurate registration, long life, and low upkeep have been combined in Hersey water meters. How these dependable units will help make your municipal water department self-supporting, is explained in literature from HERSEY MFG. CO., SOUTH BOSTON, MASS.

Make Your Own Street-Name Signs

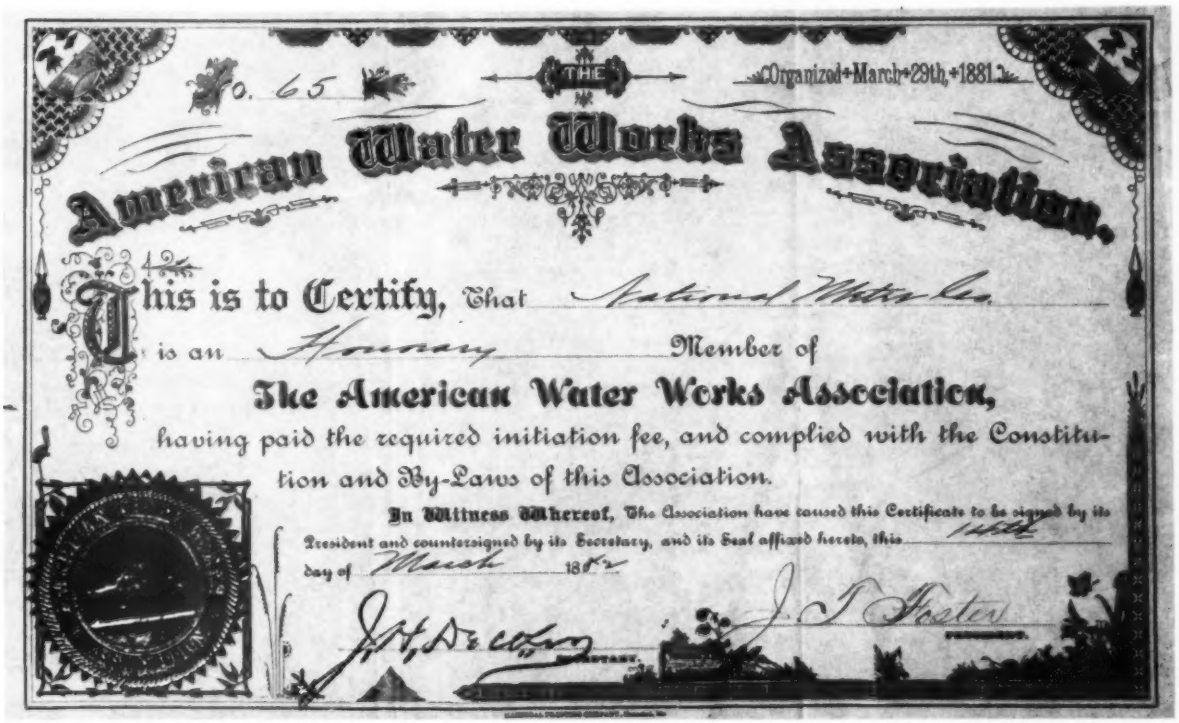
592 Now your city can make its own street-name signs, markers and nameplates with the New Hermes portable engraving machine. The new machine engraves on plastics, wood or metals. It makes permanent, attractive signs at low cost. For complete information, write DEPT. 87, NEW HERMES ENGRAVING MACHINE CORP., 13-19 UNIVERSITY PL., NEW YORK 3, N. Y.

Dust-Free Fluoridation

593 Take the dust out of fluoridation with an Omega fluoridizer, a dependable fluoride feeder with a dust-free bag loading hopper. This efficient mechanism is described and illustrated in literature from the OMEGA MACHINE CO., 358 HARRIS AVE., PROVIDENCE 1, R. I.

We've Worked and Grown Together

. . . and mighty proud to serve a great industry


No. 65
THE
Organized March 29th, 1881.
American Water Works Assgriation.
This is to Certify, That National Meter Co.
is an Honorary Member of
The American Water Works Association,
having paid the required initiation fee, and complied with the Constitution and By-Laws of this Association.
In Witness Whereof, The Association have caused this Certificate to be signed by its President and countersigned by its Secretary, and its Seal affixed hereto, this 14th
day of March 1898
J. T. Foster

Replica of membership certificate awarded the National Meter Division of Rockwell away back in 1882. Pittsburgh Meter, another Rockwell company, joined the A.W.W.A. in 1898.

Rockwell people have always been closely identified with the A.W.W.A. since the first year of its inception. From long association we have learned there is no group more dedicated to public service than the A.W.W.A. membership. It is to their credit that the water and sewage disposal systems of this country have grown to become immensely valuable properties—vital to the needs of every community.

We at Rockwell salute the A.W.W.A. on this, the 75th anniversary of the Association and pledge our continued support and close cooperation.

W. F. ROCKWELL, JR., *President* *(center) says, "We consider it our obligation to keep the development of our products and the improvement of our services ahead of the day-to-day needs of the water utilities."*

L. A. DIXON, JR., Vice President, Meter and Valve Division (left) and J. F. O'GRADY, Water Products Manager, concur.

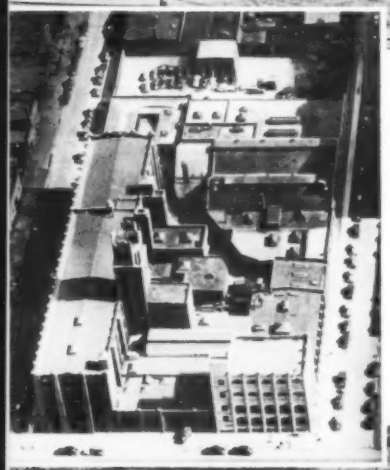
Rockwell Manufacturing Company

PITTSBURGH 8, PA.

dedicated to better service for you

Rockwell Increases Production • Intensifies

UNIONTOWN, PA. PLANT



BROOKLYN, N.Y. PLANT

PITTSBURGH, PA. PLANT

. . . better service for you

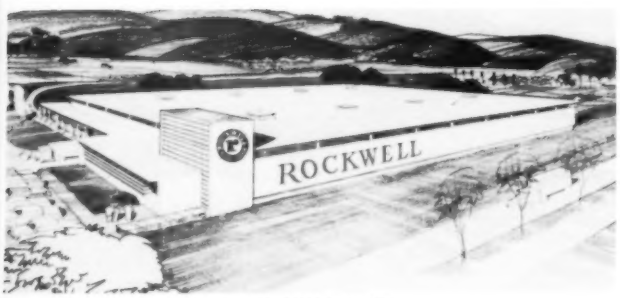
Rockwell water meters are now being made in three big plants located at Brooklyn, N.Y., Uniontown, Pa. and Pittsburgh, Pa. Service to West Coast water utilities will soon be materially benefited by the output from a large new factory now being erected in Porterville, California. And in Russellville, Ky., fabrication of raw materials has just started.

In the realm of research, extensive new Rockwell laboratories were recently opened. These are manned by a topnotch team of scientists. Rockwell facilities for product development are the finest—its staff by far the largest in the industry.

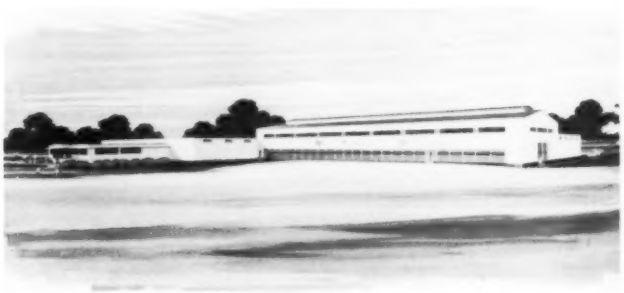
Personal service to customers has also been greatly enlarged. Nearly 200 trained and experienced men now represent Rockwell working out of 18 District Offices.

To the water works industry, all this means greater productive capacity, more new and improved products plus better service to those who buy and use Rockwell water meters.

NEW ROCKWELL PLANTS TO BE OPENED IN 1956



PORTERVILLE, CALIF.



RUSSELLVILLE, KY.

Research • Enlarges Sales Staff

P. C. KREUCH, ***Rockwell Vice President,*** says, "You can look to our staff of qualified territorial managers, and our large well-trained field force for real service to the industry."

Men Who Know Their Business

J. G. HOYT
Atlanta Dist. Mgr.

G. A. CUNNINGHAM
Charlotte Dist. Mgr.

F. C. ARENS
Boston Dist. Mgr.

R. A. JOHNSON
New York Dist. Mgr.

D. H. SHOEMAKER
Philadelphia Branch Mgr.

R. V. BURNETTE
Chicago Dist. Mgr.

T. O. CARSON
Pittsburgh Dist. Mgr.

E. D. PROPPS
Dallas Dist. Mgr.

T. I. STACY
Houston Dist. Mgr.

W. A. ADKINS
Midland Branch Mgr.

C. J. LANDRY
New Orleans Br. Mgr.

D. D. COLLINS
Shreveport Dist. Mgr.

ORVILLE COCHRAN
Denver Branch Mgr.

M. D. GILBERT
Kansas City Dist. Mgr.

H. M. LOGAN
Tulsa Dist. Mgr.

E. M. CLORAN
Los Angeles Dist. Mgr.

W. F. GULLEY
San Francisco Dist. Mgr.

R. E. NIMTZ
Seattle Dist. Mgr.

PLUS A FIELD FORCE OF NEARLY 200 TRAINED AND EXPERIENCED MEN TO SERVE YOU

. . . See important announcement, next page.

G. T. BOWMAN, ***Products Manager,*** *tells why*

The New Rockwell
Parts Packaging Program
. . . Means Better Service For You

▲ Shipping room at a Rockwell parts depot.

▲ Measuring chambers individually packaged.

▼ Packaged parts stack neatly, save space.

Save Time—Space—Money

Most parts for Rockwell meters are now being neatly packaged in convenient quantities. Each package is clearly labeled. Complete parts for many sub-assemblies can also be obtained pre-sorted into easy-to-use packets.

These compact, carefully designed packages prevent damage in shipment or deterioration in storage. They stack neatly on shelves—eliminate the need for bulky bins—simplify inventory control and re-ordering.

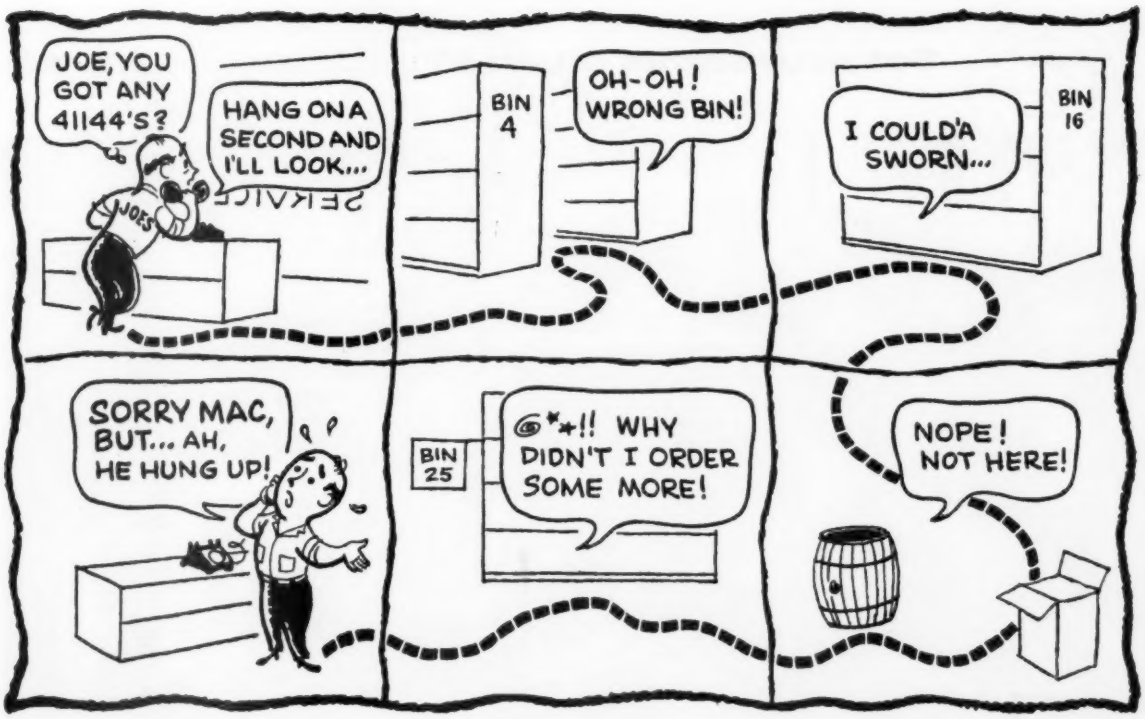
This packaging program saves you time, space and money. It's just another way Rockwell offers better service and better value to water utilities.

ROCKWELL

Rockwell Manufacturing Company

PITTSBURGH 8, PA. Atlanta Boston Charlotte Chicago Dallas Denver Houston Los Angeles Midland, Tex. New Orleans New York N. Kansas City Philadelphia Pittsburgh San Francisco Seattle Shreveport Tulsa In Canada: Rockwell Manufacturing Company of Canada, Ltd., Toronto, Ontario

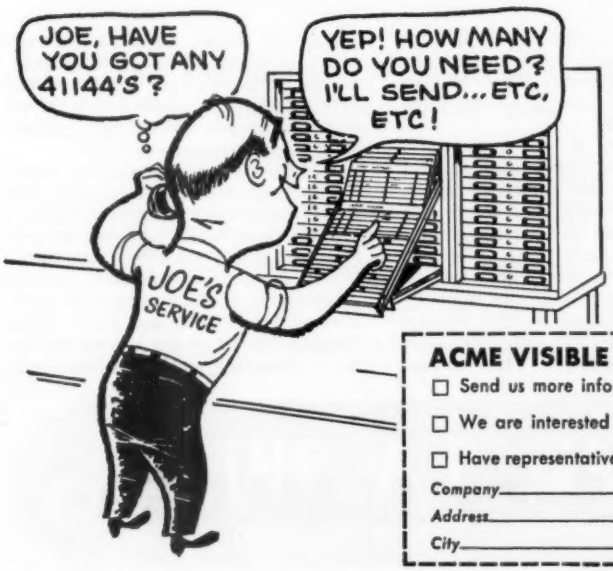
Litho in U.S.A.



and then he bought an

ACME VISIBLE

INVENTORY CONTROL SYSTEM



Know *what* you have, *where* it is and *when* you will need more! Regardless of the size of your business, inventory control enables you to get faster, more dependable results with substantial savings in work, time and money. Ask the man from Acme to show you samples.

ACME VISIBLE RECORDS, INC.
CROZET, VIRGINIA
DISTRICT OFFICES AND REPRESENTATIVES IN PRINCIPAL CITIES

ACME VISIBLE RECORDS, INC., Crozet, Virginia F-556

☐ Send us more information on Inventory Control System.

☐ We are interested in Acme Visible equipment for _____ (KIND OF RECORD) records.

☐ Have representative call. Date _____ Time _____

Company _____ Attention _____

Address _____

City _____ Zone _____ State _____

Set your sights on an Allis-Chalmers HD-6G

"Our new HD-6G saves man-hours . and speeds road construction."

Clyde Kilpatrick, Supervisor
District 2, Newton County, Mississippi

Versatility counts on county jobs. And in Newton County they're proving it with a new HD-6G tractor shovel. In its first two months on the job, the 6G dug pipe-line ditches, laid concrete pipe, cleared right-of-way and cut drainage ditches. The 6G also loaded sand and gravel on a State Aid road project.

On this job, it loaded a truck every three minutes, nine hours a day. No wonder Supervisor Kilpatrick says: "Our HD-6G does everything more specialized equipment can do." With its 1½-yd bucket and many interchangeable attachments, it stays busy—and busy equipment stretches budget dollars. And—as Mr. Kilpatrick says: "We're always sure of good service from our Allis-Chalmers dealer."

• • •

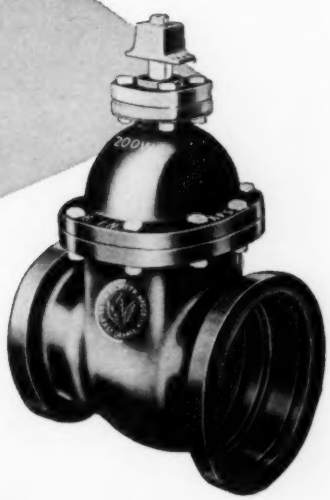
Yes, cost-conscious counties and townships get their budget's worth from the useful HD-6G. When you want equipment to lend a hand on out-of-the-ordinary jobs, you can count on the 6G. And here's why—the HD-6G represents the *most* advanced engineering in the tractor shovel business—not just in features but in *basic* design. That means plenty of *power*, superior *balance*, extra *strength* in all components, *weight* in the working parts and big safety factors . . . plus many exclusive on-the-job advantages important to owners and operators.

HD-6G tractor shovels are working in your area now. Check your Allis-Chalmers construction machinery dealer on where you can see one in action. And remember, your dealer is headquarters for factory-trained servicemen, factory-approved facilities and complete stocks of True Original Parts to keep your equipment operating right. See him soon.

HD-6G
1½-yd bucket
55 belt hp
19,600 lb

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



SMITH VALVES
WITH O'RING SEAL

When specified, "O" Rings replace conventional packing and reduce maintenance to a minimum. The lower "O" Ring (#3) is the pressure seal. The upper "O" Ring (#2) the dirt seal. The initial compression of the "O" Ring provides the seal when the valve is closed. When subject to water pressure the lower "O" Ring is forced to the top of the groove. The sealing force increases as the pressure increases. The "O" Ring seal construction eliminates packing, the packing gland, gland adjustment and gland bolts and nuts. All Smith Valves can be equipped with "O" Ring Seal plates. Write for details.

45

FIRE HYDRANTS · VALVES · SINCE 1896

THE A.P. SMITH MFG. CO.

EAST ORANGE, NEW JERSEY

GOING IN...

...a long-term community investment

It's Transite Ring-Tite Pressure Pipe

• Transite® Ring-Tite® Pressure Pipe is a community investment that pays off year after year!

Its remarkably high flow characteristics protect that investment by keeping maintenance and pumping costs at a minimum during its long service life.

Corrosion Resistant

Transite Pipe is strong, durable, and highly resistant to corrosion. And it is immune to tuberculation, the form of interior corrosion that chokes the flow and increases pumping costs. Transite cannot tuberculate, thus its original high flow capacity is maintained, and pumping costs are kept at a minimum year after year.

The Ring-Tite Coupling, with rubber rings compressed and locked in place forms a joint that is tight yet flexible. Rings cannot blow out, and the automatic separation of the pipes within the coupling helps to relieve line stresses.

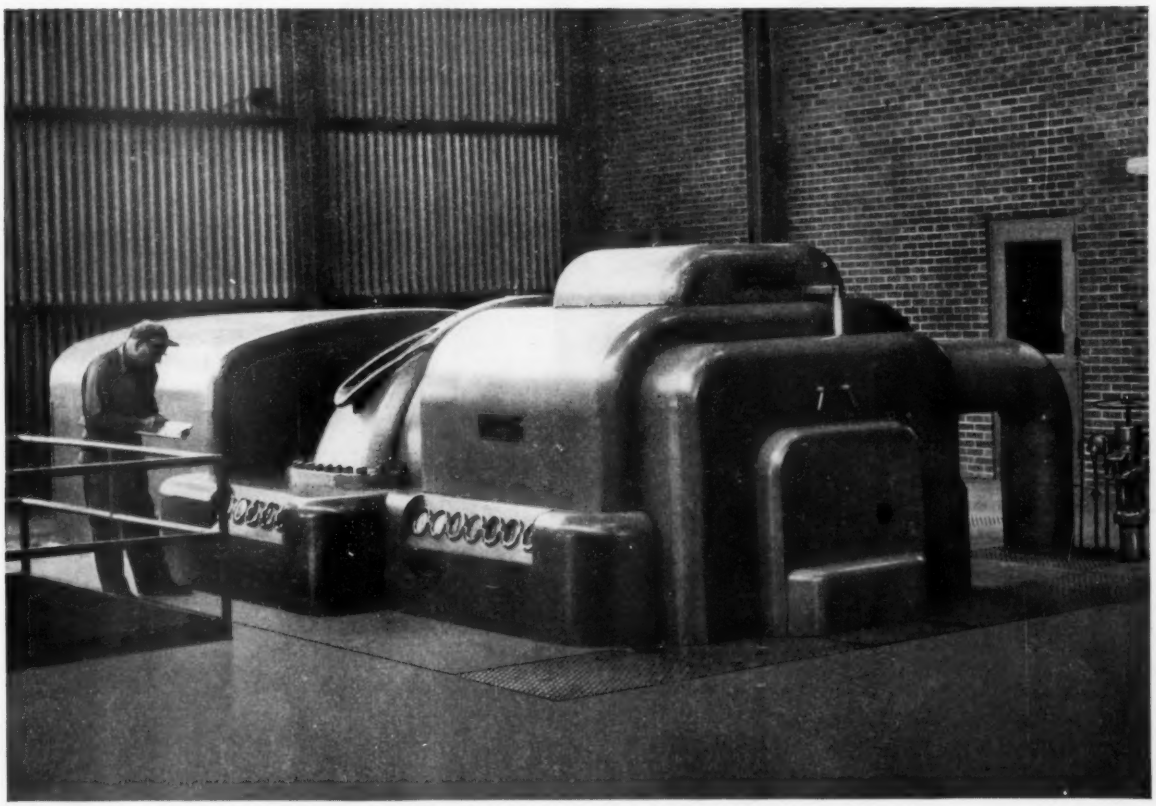
For further information about Transite Pressure Pipe and the Ring-Tite Coupling, write for Booklet TR-160A. Address Johns-Manville, Box 60, New York 16, N.Y. In Canada, Port Credit, Ontario.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville TRANSITE PRESSURE PIPE

WITH THE RING-TITE COUPLING

SPECIAL



Industrial and municipal turbine generator specialists give priority service up to 15,000 kw.

Worthington specialists in designing and manufacturing turbine generators up to 15,000 kw. are changing a lot of established buying ideas. Because they're not involved with building the huge central station turbine generators, Worthington engineers can give A-1 priority to every phase of design and manufacture of industrial and municipal units. They deliver a power package that has been completely tested, and adjustments made, to shorten installation time. They incorporate latest design advances in the turbine and generator, and finish the job with a streamlined heavy steel jacket to blend with the most modern power plant design.

When considering a turbine generator installation up to 15,000 kw., call on specialists in the field. Call your nearest Worthington District Office or write for Bulletin 1960C: Worthington Corporation, A&SP-Turbines, Harrison, N. J.

WORTHINGTON

HERSEY WATER METERS

are always a good investment

HERSEY MANUFACTURING COMPANY

SOUTH BOSTON, MASS.

BRANCH OFFICES: NEW YORK — PORTLAND, ORE. — PHILADELPHIA — ATLANTA — DALLAS
CHICAGO — SAN FRANCISCO — LOS ANGELES

Trouble and breakdowns can't hide
IN THIS SEVEN FOOT CONCRETE UTILITY TUNNEL

Lewis Flight Propulsion Laboratory of the National Advisory Committee for Aeronautics
Cleveland, Ohio

Contractor
Lombardo Bros. Construction Co.

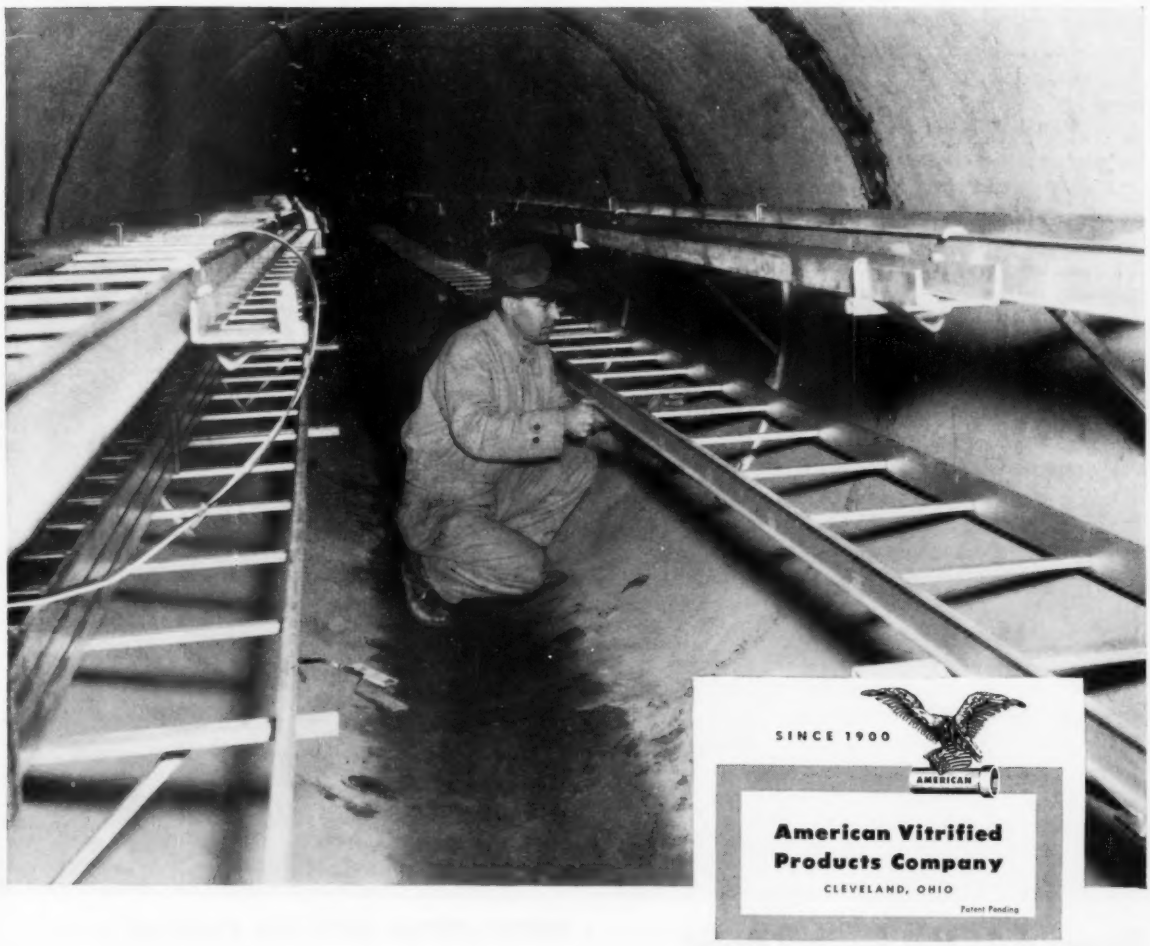
These racks will carry power lines and utility cables to a supersonic wind tunnel of the Lewis Flight Propulsion Laboratory. Repairing line breaks, which could shut down an extremely important research project, will be an easy job. A man will walk right up to the trouble zone and go to work.

American Vitrified Products Company supplied several thousand feet of special order 78-inch concrete pipe for this project. Galvanized inserts were welded to the reinforcing steel in the pipe. Supporting brackets holding the cable racks are then bolted to the inserts.

American Vitrified Products Company is often called on for these complicated jobs. Our years of experience and technical know-how guarantee customer satisfaction.

Concrete pipe is just one of the many products we manufacture. We also produce the new Amvit Jointed Clay Pipe, flue liners—both glazed and unglazed, and clay liner plates.

For more information, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.



Plants Across the Nation... Brazil, Indiana • Chicago, Illinois • Cleveland, Ohio • Crawfordsville, Indiana • Detroit, Michigan • East Liverpool, Ohio Fenton, Michigan • Grand Ledge, Michigan • Lisbon, Ohio • Los Angeles, California • Milwaukee, Wisconsin • South Bend, Indiana • Uhrichsville, Ohio

How Modern Transit Can Help Solve City Parking Problems

The parking squeeze is tighter now than at any other time in our history. There just isn't enough space in our business districts to accommodate all of our automobiles. The resulting loss of business and tax revenues and the prohibitive cost of making room for more cars is of real concern to all communities.

Informed civic leaders are coming to realize that for the average business district, about 2 square feet of automobile parking area would be required for each square foot of business floor, if all workers and customers travel via private automobile.

A modern transit system can help you solve this parking problem.

SPACIOUS, OUTLYING PARKING LOTS, serving a *fast,* modern transit system on a separate right-of-way, encourage drivers to park their cars outside the business district. People welcome the opportunity to drive, free of traffic, to a nearby transit station, park without searching for space, and ride quickly and comfortably to their destinations. Cleveland, Boston and other large cities report that transit riders have accepted the "park and ride" idea enthusiastically.

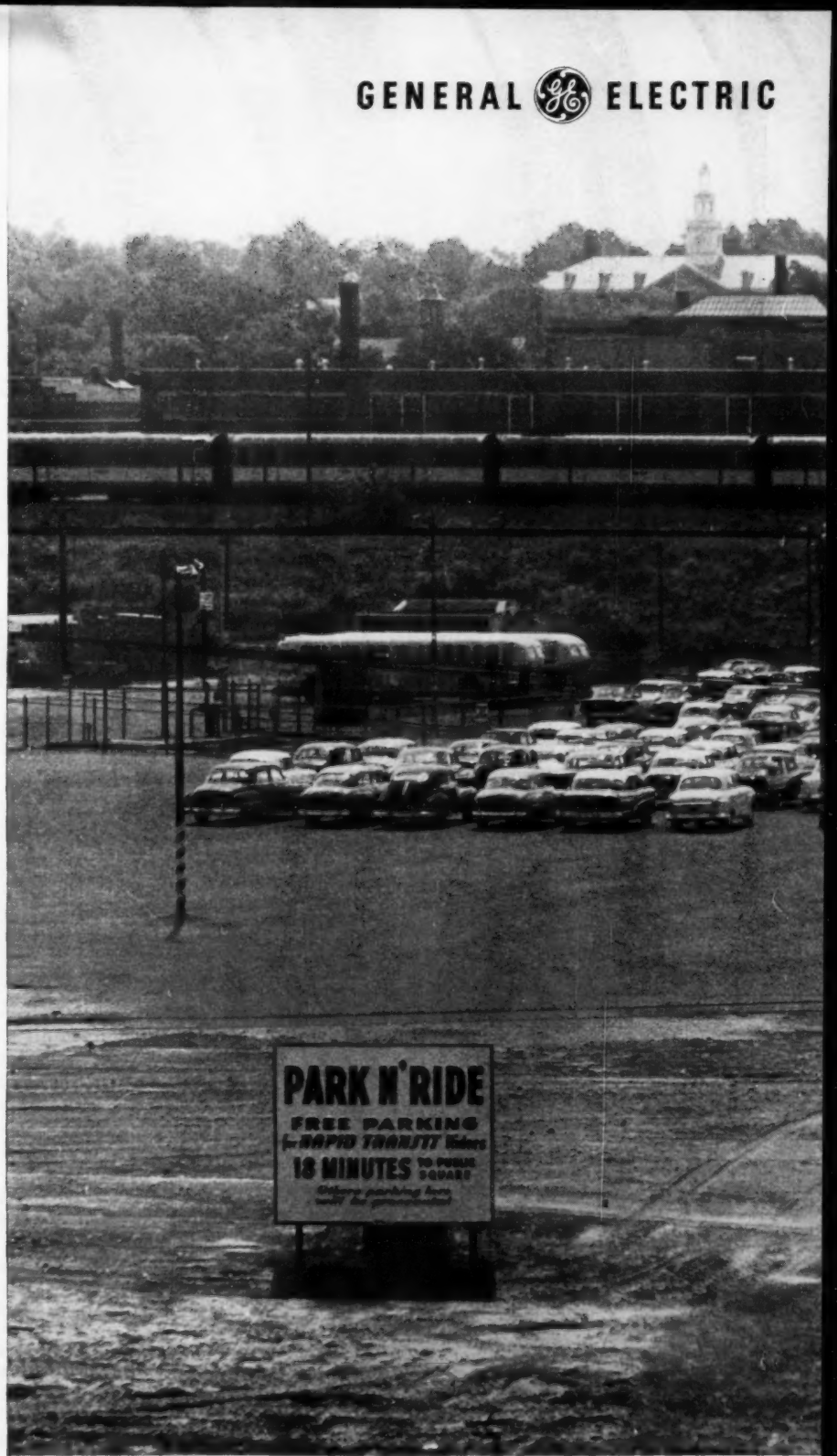
Too, since modern transit reduces the demand for downtown parking, valuable city land that would normally be earmarked for parking can be put to more productive community use.

Find out how modern transit can work to best advantage for your city. Write Section 107-32, General Electric Co., Locomotive and Car Equipment Department, Erie, Pa., for illustrated brochures.

Progress Is Our Most Important Product

GENERAL ELECTRIC

OVERFLOWING MIDTOWN PARKING is one of the things that drives business away from your city. Drivers detest the frustrating search for a place to park that accompanies each trip downtown.



OUTLYING TRANSIT PARKING is convenient and easy. People who drive autos are happy to leave parking problems behind and travel swiftly and comfortably into the business area on fast transit.

PDM
WATER STORAGE TANKS

DEPENDABLE WATER STORAGE

for **BETTER WATER SERVICE**

—to communities and industries everywhere

PITTSBURGH •DES MOINES

- *Elevated Steel Tanks*
- *Reservoirs*
- *Standpipes*

The requirements of the consumer for safe, dependable water supply at constant pressure around the clock are met with maximum efficiency and economy by PDM steel storage units—available in a wide range of elevated steel tank types, and all sizes of steel reservoirs and standpipes for service where natural elevations are adequate. • Our experience is at your service in consultation. Our craftsmanship and guarantee of satisfaction are part of every job. Estimates and quotations provided promptly on request.

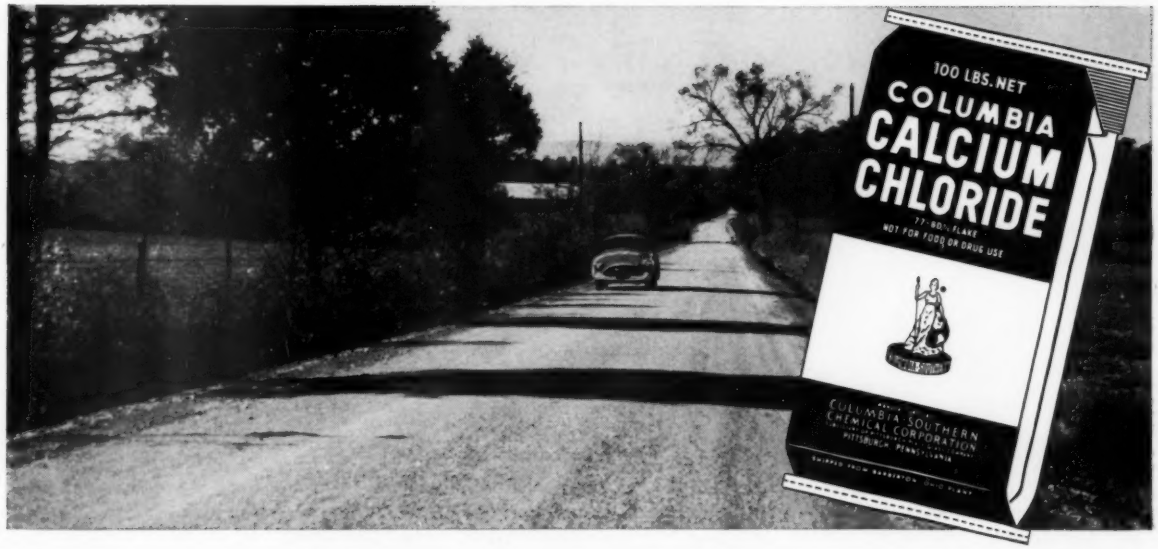
Write for our brochures on PDM Elevated Tanks, and Reservoirs.

PITTSBURGH • DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES, SANTA CLARA, FRESNO, and CADIZ, SPAIN

Sales Offices at:

PITTSBURGH (25) . . . . 3412 Neville Island
NEWARK (2) . . . 215 Industrial Office Bldg.
CHICAGO (3). 1216 First National Bank Bldg.
LOS ANGELES (48) . . . 6399 Wilshire Blvd.
DES MOINES (8). . 913 Tuttle Street
DALLAS (1). . 1217 Praetorian Bldg.
SEATTLE . . . . . 520 Lane Street
SANTA CLARA, CAL., 619 Alviso Road
MADRID, SPAIN . . . Diego DeLeon, 60



Dustless roads for less money with COLUMBIA CALCIUM CHLORIDE!

- **please residents by stopping dust**
- **provide a smooth, durable surface**
- **conserve aggregates, cut costs**
- **reduce the number of bladings**

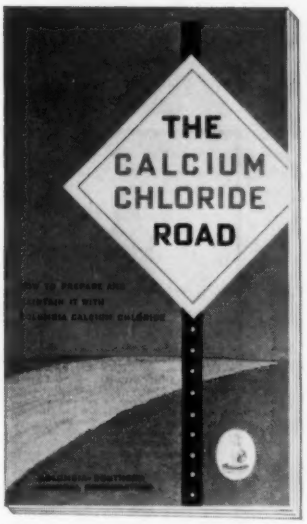
The all year performance and maintenance requirements of unpaved roads are largely dependent upon the conditioning and calcium chloride treatments made during the Spring.

Spring rains supply the moisture necessary for the efficient blading and shaping work. Late Spring application of calcium chloride insures best year-round performance. Natural road moisture is preserved to eliminate the formation of dust during the hot, dry summer months.

Spring conditioning of your unpaved roads pays big dividends throughout the year. Shape and crown your roads now, then treat with Columbia Calcium Chloride.

Order your supplies of Columbia Calcium Chloride today. Prompt delivery.

Address Calcium Chloride Dept. at our Pittsburgh address or any of the district offices.

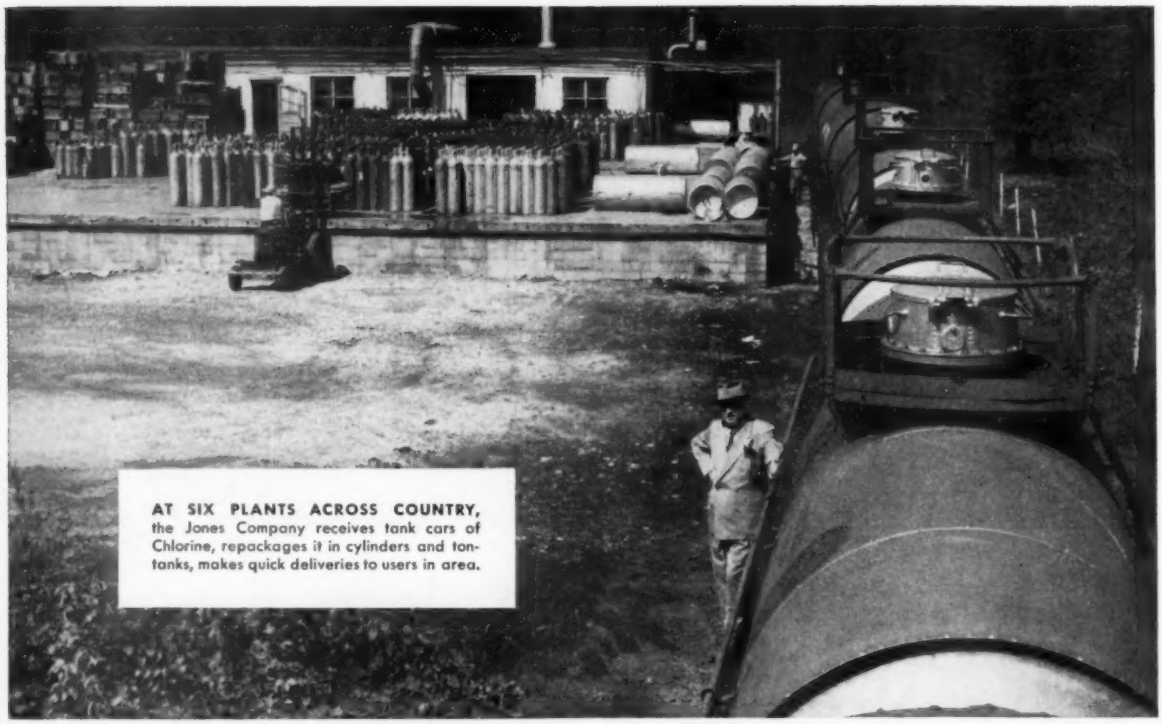


Write now for your copy of this new 28-page booklet!

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland • Boston New York • St. Louis • Minneapolis New Orleans • Dallas • Houston • Pittsburgh • Philadelphia • San Francisco

IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division.



AT SIX PLANTS ACROSS COUNTRY, the Jones Company receives tank cars of Chlorine, repackages it in cylinders and ton-tanks, makes quick deliveries to users in area.

CHLORINE: Fast delivery on less-than-carload lots

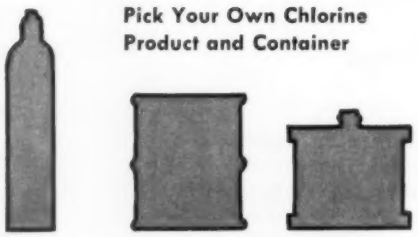
You get swift delivery—and NO storage worries—when you turn your Chlorine problem over to John Wiley Jones Company. Six plants, strategically located across the U.S., stand ready to supply you.

Order shipments as small as a 16-lb. cylinder of liquid Chlorine, and as large as you want. With this flexibility, you eliminate storage problems. We supply more municipalities than all other Chlorine packers combined.

Quality is exceptional—meets high government standards!

Our trained technical staff will be glad to help you solve your Chlorine problem. Write for prices.

Pick Your Own Chlorine Product and Container



LIQUID CHLORINE
In 16-, 105-, 150-lb. cylinders and 1-ton tanks.

CALCIUM HYPOCHLORITE
(70% available Chlorine) 3¼- and 5-lb. tins, 100-lb. drums.

SODIUM HYPOCHLORITE
Gallons, carboys. Tankwagon deliveries in 1000-3000 gal. lots.

JOHN WILEY JONES CO.

100 Sunny Sol Blvd.
Caledonia, New York
Tele—Caledonia 84, 79, 4

1904 Border Ave.
Torrance, Calif.
Tele—Fairfax 8-6383

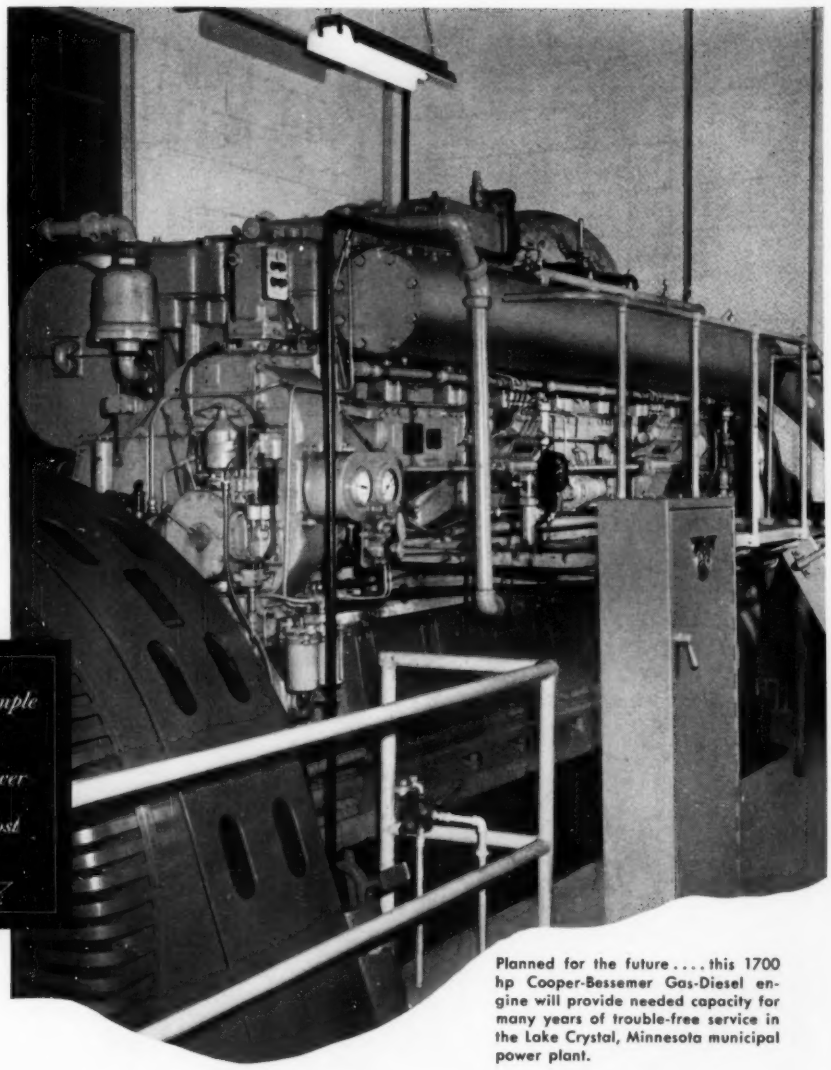
600 Bethel Ave.
Beech Grove
(Indianapolis), Ind.
Tele—
Idlewood 1443, 1444

2365 Dennis St.
Jacksonville, Fla.
Tele—Elgin 4-5503
6-3321

610 McNinch St.
Charlotte, N. C.
Tele—6-7790

14400 N.E. 20th Lane
North Miami, Fla.
Tele—North Dade 6-6288
or Dial 81-6-6288

Why this small municipal plant bought extra engine output



Planned for the future . . . . this 1700 hp Cooper-Bessemer Gas-Diesel engine will provide needed capacity for many years of trouble-free service in the Lake Crystal, Minnesota municipal power plant.

● Lake Crystal, Minnesota carefully studied the matter, installed a high output Cooper-Bessemer engine, and they're far from sorry. This small community enjoys substantial savings from a 1200 kw. . . . 1700 hp. . . . 155 bmep Gas-Diesel engine.

The engine, a supercharged Cooper-Bessemer JS, boasts an enviable "around the clock" operational record with excellent fuel economy maintained under heavy *or* light loads. With the installation of this new unit, there's no further need for riding an engine at costly, inefficient loading in anticipation of sudden heavy increases.

Although oversized for present needs, this 8 cylinder Cooper-Bessemer will more than justify its original cost. Dependable, economical power will be available for many future years. And as Lake Crystal power demands grow . . . this JS will easily handle the increased load. No need for costly plant expansions. No new engines to buy.

Impressive month by month operating cost records of Lake Crystal municipal are available upon request. Write The Cooper-Bessemer Corporation, Mount Vernon, Ohio.

MOUNT VERNON, OHIO.
COOPER-BESSEMER
GROVE CITY, PENNA.

New York City • Seattle, Wash. • Chicago, Ill. • Houston, Dallas, Greggton, Pampa and Odessa, Texas • Washington, D. C. Shreveport, La. • San Francisco, Los Angeles, Calif. • St. Louis, Mo. • Gloucester, Mass. • New Orleans, La. • Tulsa, Okla. Caracas, Venezuela • COOPER-BESSEMER OF CANADA, LTD., Edmonton and Calgary, Alberta, Canada.

DIESELS • GAS ENGINES • GAS-DIESELS • ENGINE-DRIVEN AND MOTOR-DRIVEN COMPRESSORS

FLEXIBLE ARMCO STEEL WATER PIPE

keeps maintenance costs down to earth

Armco Steel Water Pipe eliminates many trouble spots that may consume your maintenance dollars. Strong, ductile Armco Pipe withstands damage from water hammer, ground settlement, traffic pounding and many other forces that often cause leaks or cracks in rigid, brittle pipe.

Armco Pipe, supplied in long lengths, is easy to install, requires fewer joints where leakage may occur. Mechanical or welded joints can be made bottle-tight. Outside coatings are supplied to AWWA specifications and a spun enamel lining will prevent tuberculation.

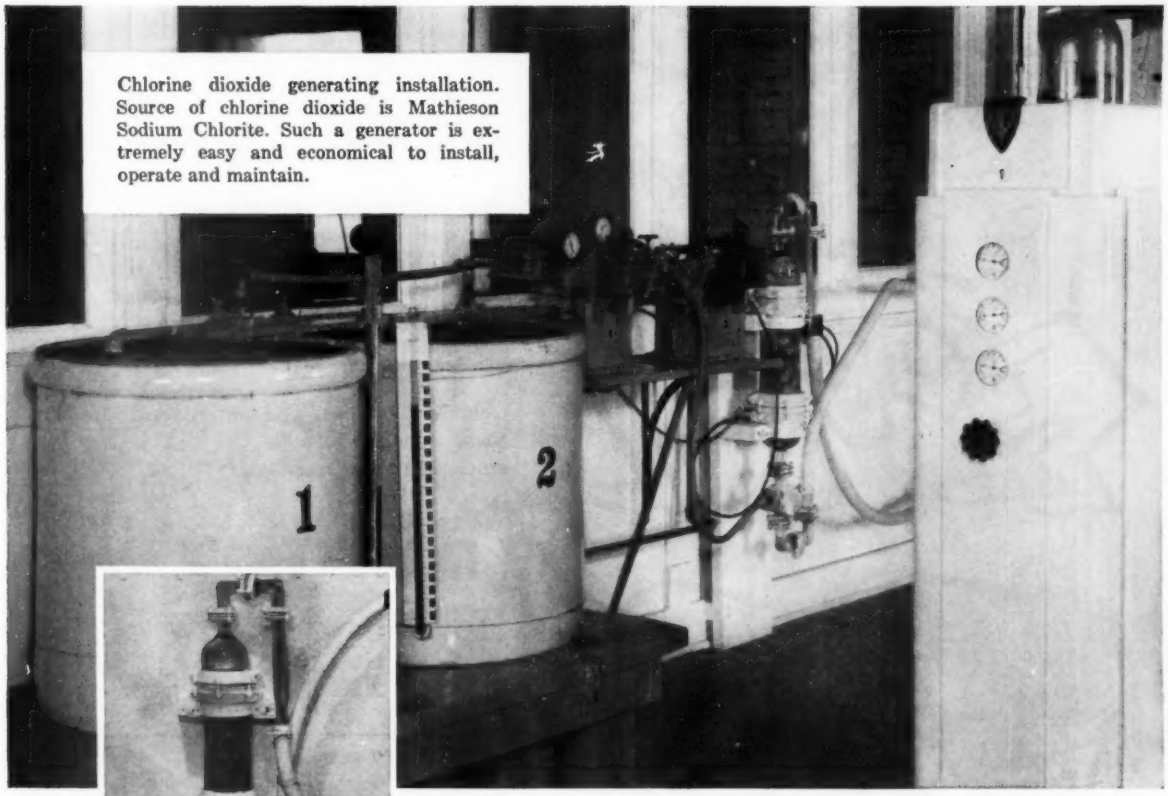
The wide range of sizes of Armco Welded Steel Pipe makes it easy to match your water line requirements exactly. Diameters range from 6 to 36 inches, wall thicknesses from $\frac{9}{64}$- to $\frac{1}{2}$-inch. Write to us for more information. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 4476 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

Wherever water flows, steel pipes it best

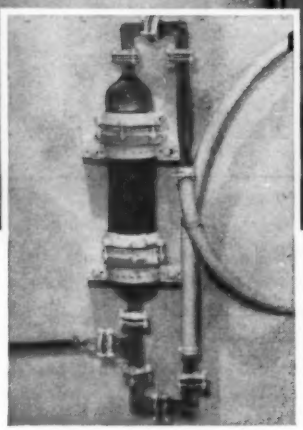
ARMCO WELDED STEEL PIPE

ARMCO®

meets AWWA specifications



Chlorine dioxide generating installation. Source of chlorine dioxide is Mathieson Sodium Chlorite. Such a generator is extremely easy and economical to install, operate and maintain.



eliminate

unpleasant tastes and odors effectively, economically

with CHLORINE DIOXIDE

Want to insure water that's free from odors and unpleasant tastes? Then use chlorine dioxide to counteract phenols, algae and industrial wastes in your raw water supplies.

Chlorine dioxide effectively oxidizes phenols to inoffensive residues . . . destroys algae and undesirable bacteria.

This method—using safe, easy-to-use sodium chlorite to produce chlorine dioxide—provides a convenient, effective, economical means of purifying water supplies. It removes iron and manganese. In many cases it eliminates the need for carbon and ammonia in water treatment. And, unlike breakpoint or superchlorination, this method requires little control or supervision.

Get full technical information about water purification with chlorine dioxide produced from Mathieson Sodium Chlorite. Mail the coupon today.

MATHIESON

OLIN MATHIESON CHEMICAL CORPORATION
Industrial Chemicals Division
Baltimore 3, Maryland

Please send me technical information about Mathieson Sodium Chlorite as a source of chlorine dioxide for use in municipal water treatment.

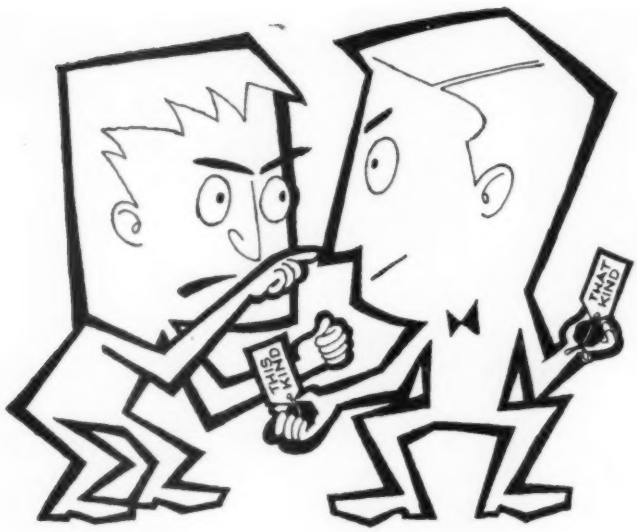
Name_____

Title_____

Address_____

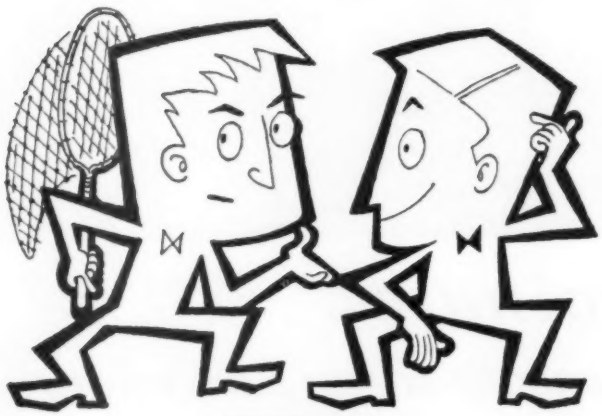
_____

3862



What's the big idea buying several kinds of coal for our steam plants?

It's a good idea. The kind of coal that burns most economically in the old boilers isn't efficient for the new ones.



How do you know you're right?

Look at the coal bills. We are generating more steam at a lower fuel cost. You can tell from the ashes we are getting more complete combustion, and there's less clinkering.

Where did you get this idea, anyway?

From the C & O Coal Department. They convinced us that different types of burning equipment need different types of coal. From the high quality coal produced on the C & O, we selected the quality and size of coal that works best in our particular installations.

P.S.

There's a lot more to buying coal than the cost per million BTU. Why not contact coal producers on the C & O to solve your particular fuel requirements, or write to: R. C. Riedinger, General Coal Traffic Manager, Chesapeake & Ohio Railway Co., Terminal Tower, Cleveland 1, Ohio, for the assistance of a C & O fuel service engineer.

Chesapeake and Ohio Railway

WORLD'S LARGEST CARRIER OF BITUMINOUS COAL

are your meters run down?

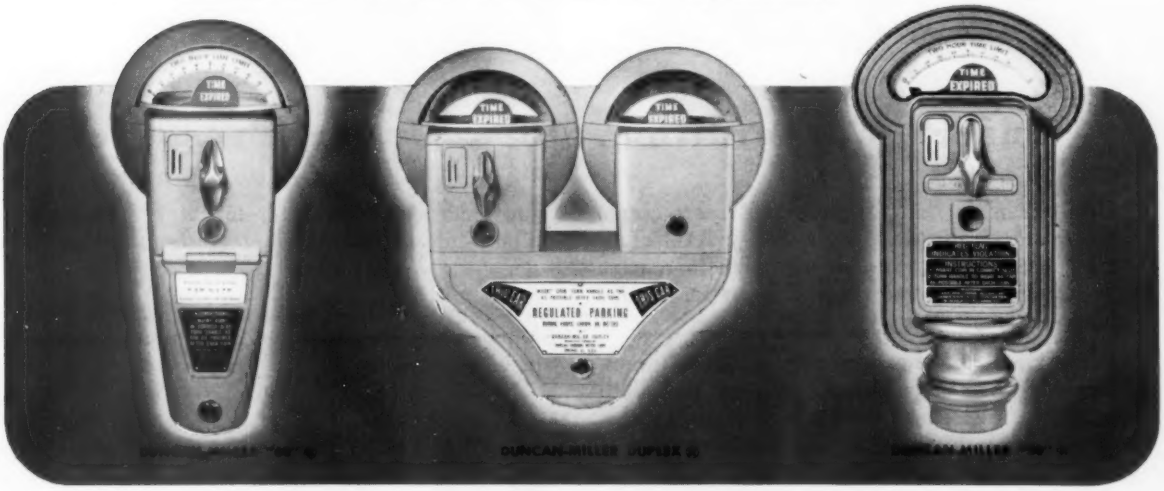
. . . suffering from spring fever?

Revitalize your parking control program by eliminating costly winding expense. Recoup losses of revenue resulting from unwound, inoperative meters.

Investigate . . . Discover why the economy of DUNCAN-MILLER operation allows hundreds of cities to bank instead of crank their revenue away.

Simple . . . Positive . . . Accurate DUNCAN-BUILT products are immune to "spring fever" and stand ready to operate under all conditions. You can "bank" on their dependability.

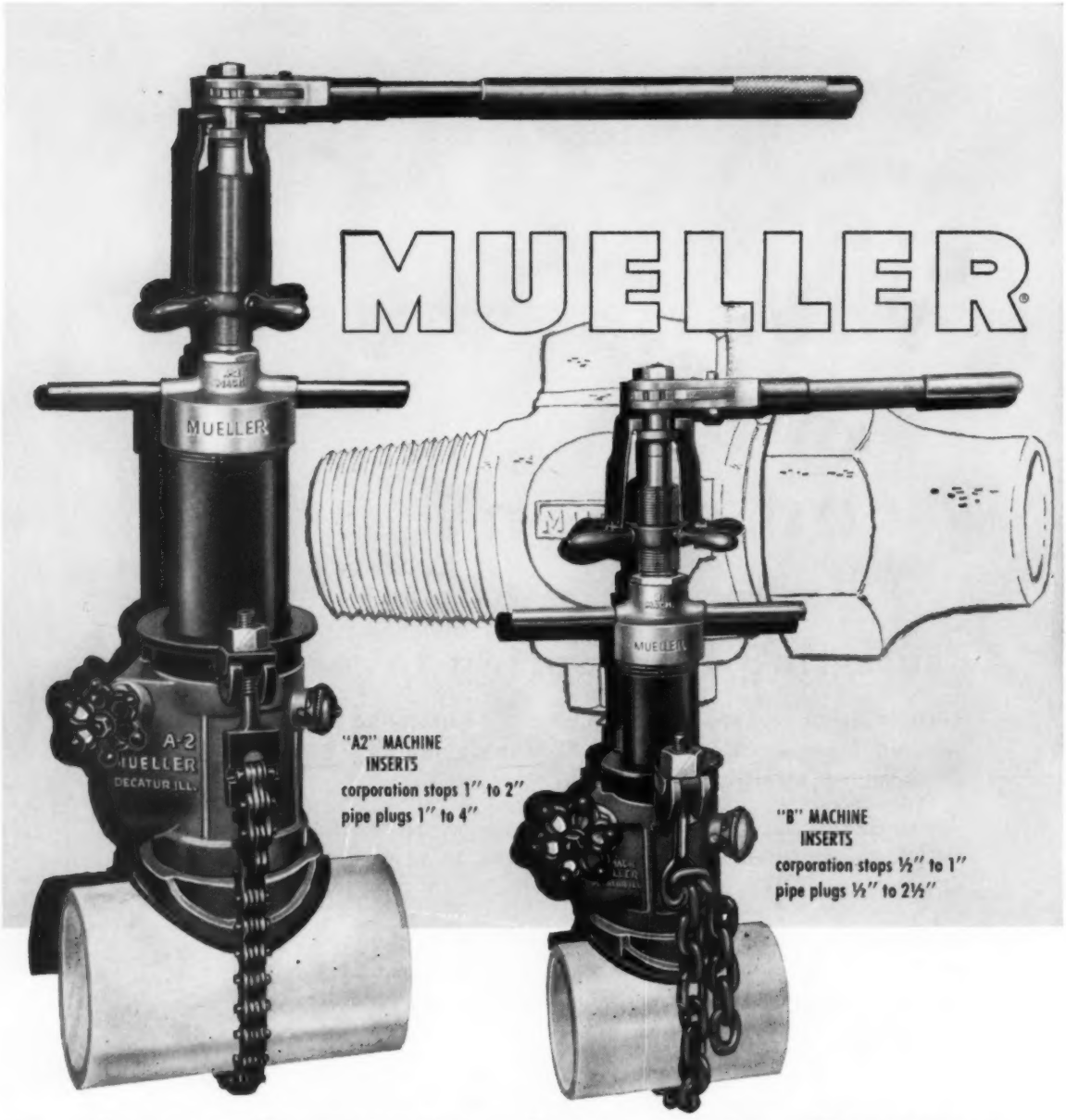
● **Write today for brochures and detailed information.**



DUNCAN PARKING METER CORP.

835 NORTH WOOD STREET, CHICAGO 22, ILLINOIS • FACTORIES: HARRISON, ARKANSAS AND MONTREAL, P.Q., CANADA

Manufacturers of fully automatic and manual parking meters.



Insert Corporation Stops Under Pressure

Drill the main, tap the hole and insert corporation stops with the Mueller "B" or "A-2" Tapping Machine. Or you can use them to remove and replace old corporation stops or insert pipe plugs—*all under pressure.*

Drilling and tapping operation are done simultaneously with a combined drill and tap. Both machines use a single boring bar for drilling, tapping and inserting operations. This assures accurate alignment for inserting the stop—eliminates the possibility of cross-threading.

Combination by-pass and test valve relieves pressure and permits operator to check for leakage after stop is inserted and before machine is removed.

Refer to Mueller Catalog W-96, contact your Mueller Representative, or write direct for complete information.

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

Safest "Get-There" Protection

FOR PROOF: DRIVE IT YOURSELF!

The safest, fastest "get-there" power is Four Wheel Drive! It's a scientific fact—proved in independent truck research—that the best traction comes from four wheel drive. It gives you faster starts at the station, tighter turns in traffic, safer four wheel traction any time, any weather. This kind of high speed safety should be at the top of your "feature" list when buying a truck. You can prove it for yourself without obligation by scheduling a visit from one of the FWD traveling demonstrators.

You can test drive the FWD Special "750", one of the proudest pumpers in the FWD line . . . yet moderately priced within the range of rural or suburban departments. This pumper has the big RD-501 engine and is equipped to meet all your fire fighting needs. You get all the advantages of FWD's famous drive line, with power and weight distribution that more than meets Underwriters Requirements.

America's Safest FWD *Fire-Fighting Apparatus*

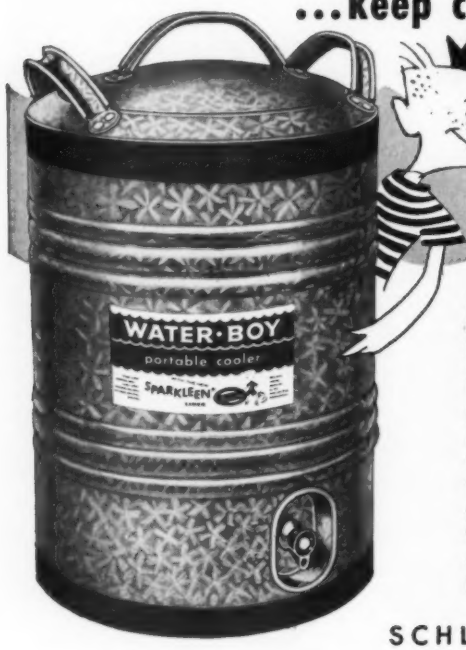
LOCAL DEMONSTRATIONS

Ask to have one of the FWD traveling demonstrators schedule a stop in your community to show your buying committee the advantages of Four Wheel Drive. See it, test it, drive it!

THE FOUR WHEEL DRIVE AUTO COMPANY • Clintonville, Wisconsin • *Canadian Factory* • KITCHENER, ONTARIO

Keep Worker Efficiency Up!

...keep cool drinking water on the job with



WATER BOY
portable water coolers

Keep workmen on the job by keeping sparkling pure, refreshingly cool drinking water on the job. Efficiency goes up when Water Boy Portable Coolers are kept handy on every type of construction and maintenance work.

Water Boy Coolers are big, rugged, built to take abuse. They feature double-locked seams and bottoms, brass-nickel plated recessed faucets, fully enclosed or open-rimmed covers. There's the new SPARKLEEN liner, too, that keeps water sparkling clean, odor-free and taste-free.

You'll find Water Boys are a money-saving investment everywhere they're used.

QUALITY HEAVY METALWARE
Deluxe
SCHLUETER MFG. CO. ST. LOUIS MO.

SCHLUETER MFG. CO., ST. LOUIS 7, MISSOURI

---

8 MB Markers for City or County

LineMaster

Double-Line Marking
Low-Priced
Automotive-Type Steering

Shift-O-Matic Drive
18 Gallon Tank
Self-Propelled

mark more lines per hour at lower cost

Super 10

Three-Line 2-Colors
30 to 90 Gallon Capacity
One-Man Operation

Easy Maintenance
Speeds To 10 MPH
Self-Propelled

MB CORPORATION
PACKER BODIES • LINE MARKERS • SWEEPERS • PAINTS AND BEADS
MANUFACTURERS OF QUALITY MUNICIPAL AND CONSTRUCTION EQUIPMENT SINCE 1907

WRITE FOR CATALOG
M-B CORP. New Holstein, Wis.

Gets more . . . Keeps more . . . Delivers more

more **PRODUCTIVE** capacity

New model **HO**
2¼ cu. yd. CAPACITY
7,500 lbs. @ 4 mph

It's the yardage a tractor-shovel delivers per hour or per shift that counts, and that is why the big new model HO "PAYLOADER" is outstanding. Its famed bucket action with Pry-out and 40° tip-back *gets more* load. It *keeps more* load (less spillage) while carrying because of the exclusive bucket cushioning . . . . it *delivers more load.*

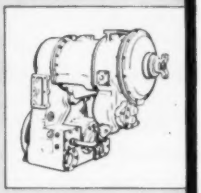
The model HO is the biggest and finest "PAYLOADER" ever offered in all Hough's history of tractor-shovel pioneering and leadership. It delivers better, more reliable traction than any wheeled tractor shovel ever has . . . . is more maneuverable, faster, easier operating and easier riding — with or without a load. It has power shift (no clutching), 4-wheel power brakes and power steer plus proven design that assures long life and low maintenance.

If you want big yardage day after day, without interruption, you want this big model HO. Your "PAYLOADER" Distributor is ready to give you full information.

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

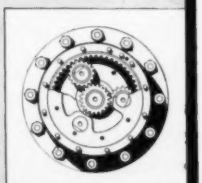
Complete Power-Shift Transmission

The fastest and easiest-operating transmission ever built. All shifts can be made instantly, on-the-go, under full engine speed. There's no stopping for a RANGE shift, there's no foot clutch. With the forward-reverse control the operator can "creep" the machine at full engine speed, in any gear, while maintaining full bucket action . . . all this plus torque converter drive.



Planetary Final Drives

Rugged planetary final drives in the wheel hubs, plus hypoid differential gearing, keep torque low in axles . . . prolong life of axles and all drive train parts. Torque-proportioning differentials assure effective traction under slipping conditions. If one wheel starts to slip more power is delivered to the opposite wheel.

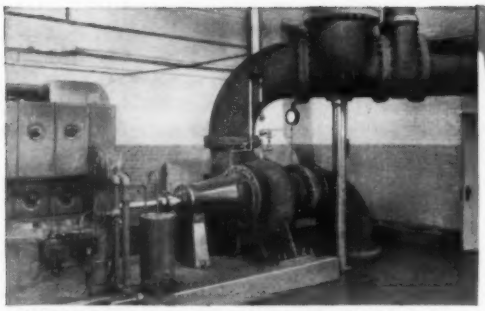


THE FRANK G. HOUGH CO.
710 Sunnyside Ave., Libertyville, Ill

Send full information on "PAYLOADER" 4-wheel-drive tractor-shovels.

☐ model HO—2¼ cu. yd. ☐ model HH—1½ cu. yd.
☐ model HU—1 cu. yd.

NAME _____
TITLE _____
COMPANY _____
STREET _____
CITY _____
STATE _____



MDC Quincy (sewage): Twin 20″ F-M "Angle-flow" pumps are driven by F-M diesels in this station recently converted from steam power.

MDC Charlestown (sewage): Two F-M diesels drive 36″ F-M vertical pumps. The engines also drive 20 kw. F-M generators.

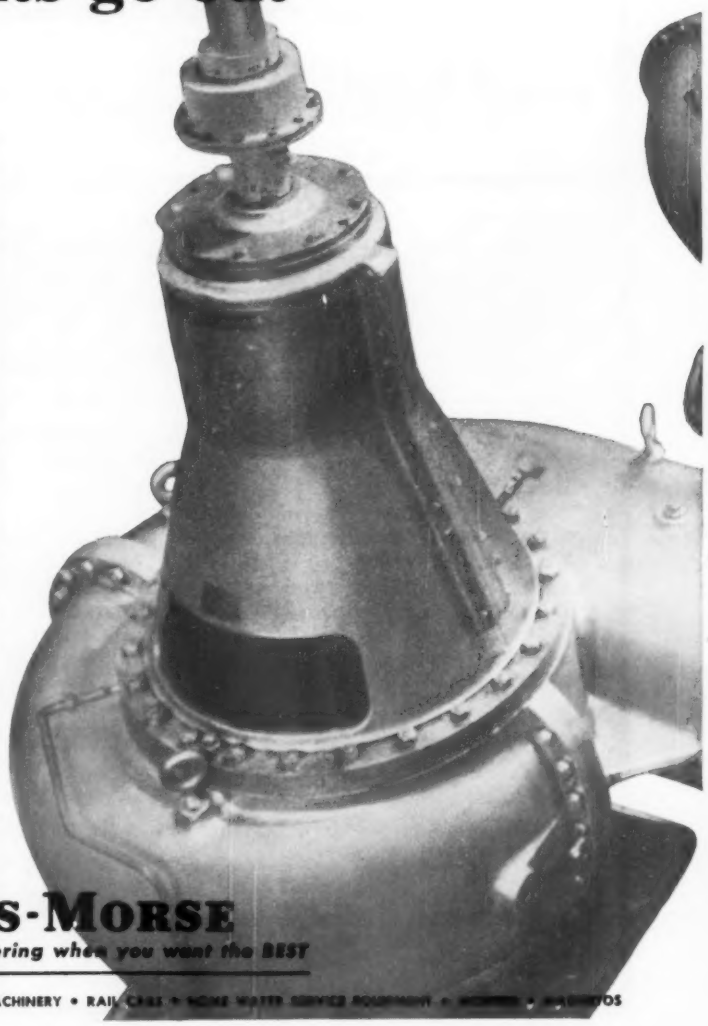
When the lights go out

...MDC keeps pumping. MDC is the Metropolitan District Commission, an organization which exists to provide coordinated municipal services, parkways and recreational facilities for Boston and many of the cities and towns which are integrated in the metropolitan area.

Many of MDC's water and sewage pumping stations are completely self-sufficient. Others, dependent for normal service on utility electric power, have stand-by power of their own—just in case the lights go out.

Fairbanks-Morse has supplied the driving as well as the driven member in many MDC installations. F-M diesels drive F-M pumps in continuous service. Other F-M pumps are driven by F-M motors. Still others, diesel powered, are standing by for the possible emergency.

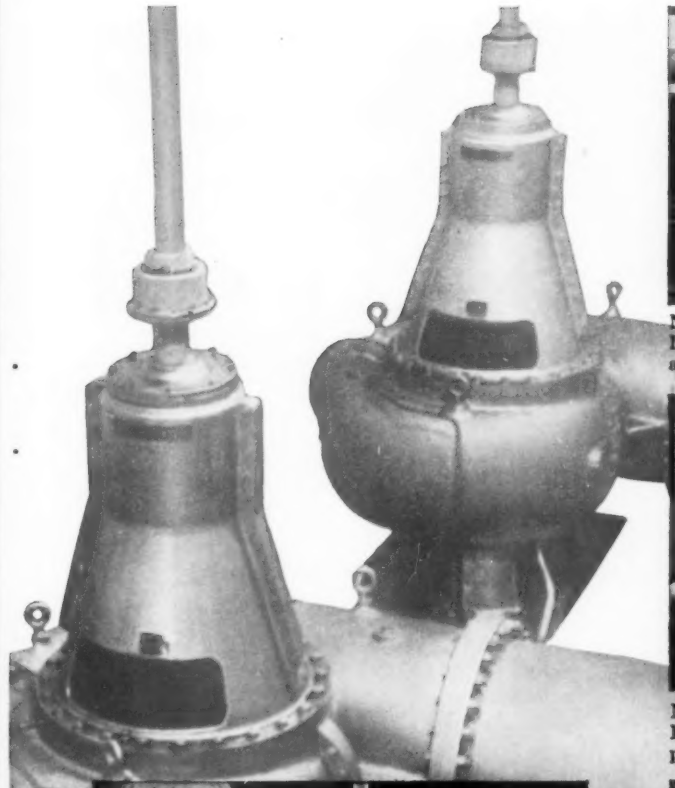
Whatever your problem in municipal pumping, Fairbanks-Morse has the pump . . . and the driver . . . and the engineering to solve it. Fairbanks, Morse & Co., Chicago 5, Illinois.

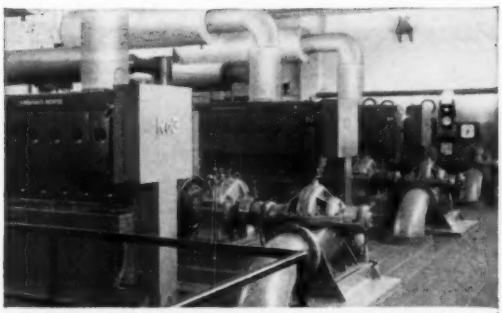


FAIRBANKS-MORSE

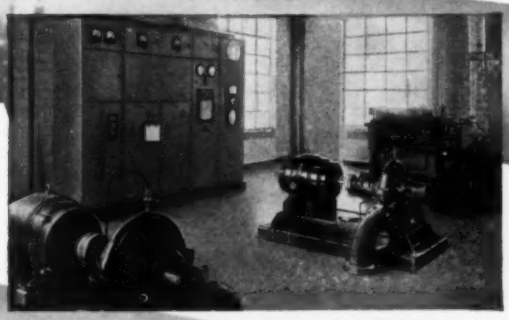
a name worth remembering when you want the BEST

PUMPS • SCALES • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MOTORS • MAGNETOS

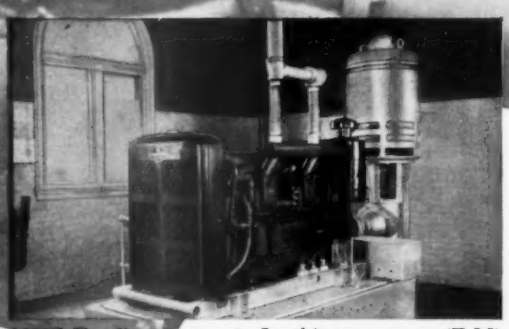




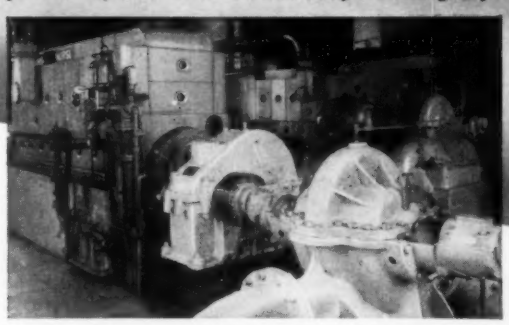
MDC Brookline (water supply): The new station on Newton Street houses three F-M centrifugal pumps and three F-M diesel engines.



MDC Waltham (water supply): F-M pumps and F-M motors fill routine demands. A third pump, powered by an F-M diesel, stands by for emergency.

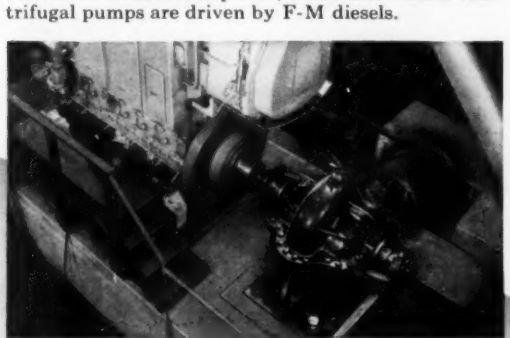


MDC Reading (sewage): In this two-pump (F-M) station, an F-M diesel can take over in the event of power failure to the 100 hp. F-M electric motor.



MDC Arlington (water supply): In a station recently converted from steam power, Fairbanks-Morse centrifugal pumps are driven by F-M diesels.

MDC Alewife Brook (sewage): In this new all-electric pumping station, two 36" and one 16" F-M "Angleflow" pumps are motor driven from the floor above.



MDC Spot Pond (water supply): A 20" F-M centrifugal (illustrated) and a 36" F-M turbine, driven by F-M diesels, are taking over from steam.

an important new "PLUS FACTOR" of the Motorola Twin-V Radiophone

TRANSISTORIZED MOBILE DYNAMIC MICROPHONE

Unprecedented voice clarity for mobile radio transmission

- true moving coil dynamic characteristics
- transistor preamplifier built-in
- printed circuit
- all-metal housing
- retains popular size and shape
- superior voice reproduction
- unexcelled reliability.

Twin-V

The new transistorized dynamic microphone, or the dual purpose dynamic "Speaker-Mike," is *optionally* available with Motorola's "TWIN-V" Radiophone—the world's finest FM 2-way mobile radio unit . . . incorporating many *exclusive* features, including universal 6/12 volt operation, Sensicon receiver, Permakay Filter, and Instantaneous Deviation Control.

Motorola's new transistorized dynamic microphone provides *mobile* transmission quality comparable to that of the base station. Unexcelled voice clarity, crispness, and intelligibility are yours in this newest Motorola *first*.

Also available as *"SPEAKER-MIKE"*

The new microphone can be furnished as a dual-purpose "Speaker-Mike" which functions as a full output communications-type *loudspeaker*, as well as a dynamic microphone. It can be conveniently mounted, or held near the operator's ear to overcome high ambient noise levels.

You can have either of these outstanding microphones as replacement items, or as *optional* equipment with new Motorola "TWIN-V" Radiophones. The transistorized, dynamic microphone, with its *popular palm size*, is directly interchangeable with Motorola carbon models now in use. The "Speaker-Mike" version requires a simple modification kit for replacement use in existing equipment.

Immediately available. Write, phone or wire today, or contact your local Motorola Radio Communications Engineer.

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.

A SUBSIDIARY OF MOTOROLA, INC., 4501 AUGUSTA BOULEVARD, CHICAGO 51, ILLINOIS

HOLMES-OWEN TRUCK LOADER provides worthwhile savings on such jobs as repaving, repairs and maintenance of streets, roads, parks, etc.

. . . . Invaluable as a WORK-SAVER on STREETS, ROADS and Numerous other operations

VERSATILE ONE MAN USE reduces cost of street cleaning, removal of debris, broken pavement, snow, hard deposits of washed-in dirt, trash, etc.

LOADER enables Truck Driver to speed-up loading and hauling of materials, thereby offering substantial savings in cost per ton handled.

CUTS cost of many Jobs as much as 50%

Cities throughout the nation are today reducing the cost of street maintenance, handling of stockpile materials and many other operations with trucks that are equipped with a HOLMES-OWEN LOADER. The use of a truck loader speeds up hauling and loading, thereby assuring faster, more efficient work. It saves time, labor and equipment by permitting the truck driver to do light digging, grading, cleaning up and loading, without the need of additional manpower or the use of more costly equipment. A truck with such versatile one-man operation can easily do the work of several men, and as such, becomes a valuable asset in reducing today's high cost of operations.

The HOLMES-OWEN LOADER is hydraulically operated, lifts ½ yard per bucket, loads the average truck in 4 minutes and can be installed on most any 1½ to 2 Ton Truck. For full information see your equipment dealer or write factory direct.

Manufactured by

ERNEST HOLMES CO., Chattanooga, Tenn.

DEPENDABILITY

proved millions of times a day

MODEL **h**

PARK-O-METER

In nearly 1200 cities in all quarters of the globe some half-million PARK-O-METERS are serving motorists with unfailing dependability millions of times each day.

Scientific design plus sturdy construction assures faultless function in tropic heat and humidity of Latin America, and in the sub-zero winters of Alaska and Canada. PARK-O-METERS will serve you well.

ASK FOR DESCRIPTIVE LITERATURE

CREATED BY THE ORIGINATORS OF METERED PARKING

Magee-Hale
PARK-O-METER COMPANY
Commerce Exchange Bldg.
OKLAHOMA CITY 2, OKLAHOMA

YOU CAN'T IGNORE **ODORS**

STOP THEM WITH **ORTHOSOLV!**

Solvay's Orthosolv has proven its worth in many different applications in scores of locations from coast to coast where it has afforded effective control of objectionable odors from many sources.

The effectiveness of Orthosolv has been demonstrated in a wide variety of applications including:

Sewage Plants	Land-fill Refuse Disposal
New Excess-capacity Sewers	Refuse Cans and Trucks
Drainage Ditches	Kennels
Incinerators	Rendering Plants
Storm Sewers	Paper Plants
Sewer Breaks	Cheese, Cannery and other Food Plants
Sludge De-watering	
Fish Market Areas	

ORTHOSOLV CHECKS CAUSE OF ODOR. In addition to being a good masking agent, Orthosolv attacks the cause of odors in many cases. It halts the development of sulfur-splitting bacteria. This is significant since this "breed" of bacteria is responsible for unpleasant hydrogen sulfide odors. In addition, Orthosolv's action retards the growth of mold micro-organisms which are related to the smelly decomposition of garbage and many waste materials.

ECONOMICAL, MIXES WITH WATER. Orthosolv mixes readily with water, can be fed directly into sewage lines or can be diluted for effective spray application. Small quantities are required–it has taken as little as two quarts of Orthosolv a day to eliminate odors from 450,000 gallons of sewage.

ORTHOSOLV CUTS FILTER FLY, SLIME AND GREASE PROBLEMS. The use of Orthosolv for odor control has developed several additional benefits of prime importance to sewage plant operators. Users have found that it eliminates filter flies and cuts slime and grease deposits.

ORTHOSOLV MAY SOLVE *YOUR* ODOR PROBLEM. Write us today–giving details of your particular problem. Without cost on your part, let us send you our recommendation. Test samples and helpful additional information are yours for the asking. Fill in the coupon and mail today.

AMERICA'S FIRST PRODUCER OF ALKALIES — SOLVAY — 75th YEAR 1881-1956

Allied Chemical

SOLVAY PROCESS DIVISION
ALLIED CHEMICAL & DYE CORPORATION
61 Broadway, New York 6, N. Y.

Gentlemen: Please send me WITHOUT COST*
☐ Test Samples

Free Literature:
☐ Orthosolv for Controlling Objectionable Odors
☐ Orthosolv for Use as a Solvent-Cleaner

Name_____

Title_____ Affiliation _____

Address _____

City_____ Zone_____ State_____

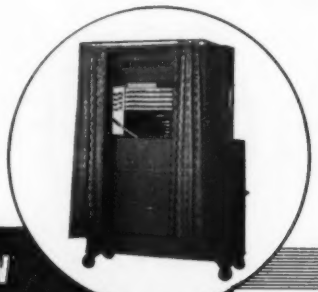
*In Western Hemisphere Countries only. DO-5

PREPARE NOW—For November 6, 1956

On Tuesday, November 6th, 1956, more Americans than ever before, (estimated at more than 65,000,000) will go to the polls to choose the next President of the United States.

The increase in population and the extensive "Get out the Vote" campaigns will place a heavy burden on your election system. If your community still uses the old paper ballot system, with its long, laborious and inaccurate counting method, act now to assure your voters of:

1. Quick, easy voting
2. Immediate returns
3. A mechanically accurate count
4. No spoiled ballots
5. Reduced election expenses



For further information, prices and literature, write

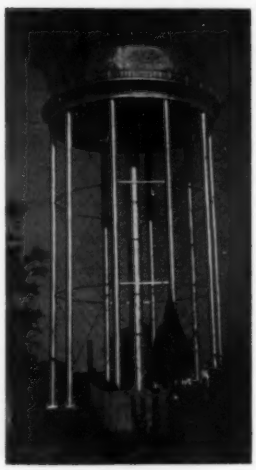
AUTOMATIC VOTING MACHINE CORPORATION
JAMESTOWN, NEW YORK

A CENTURY OF EXPERIENCE IN TANK DESIGN

● Established in 1854, COLE elevated tanks have provided a dependable water supply for mills and communities.

COLE quality is assured by careful, experienced designing and watchful supervision from blueprint to finished tank.

Send us your inquiries for tanks from 5,000 to 2,000,000 gallons—stating capacity, height to bottom, and location.

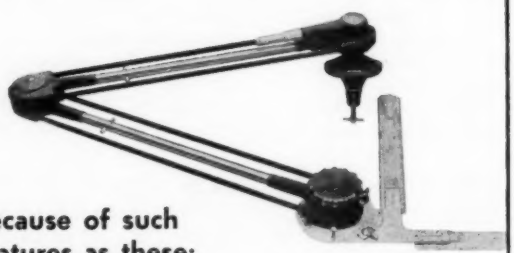


●
Write for latest Cole catalog—*Tank Talk.*
●

R. D. COLE
Manufacturing Co., Newnan, Ga.

- TANKS
- TOWERS
- CYLINDERS
- VESSELS
- STANDPIPES

Efficient engineering and drafting departments use VEMCO drafting machines



because of such features as these:

Automatic indexing for rapid settings.
Resilient scale chucks to insure firm grip.
Flexible, for speedy free movement.
VEMCO Versatilt provides easy floating motion on tilted boards.

VEMCO

See your VEMCO dealer or write:

V. & E. Manufacturing Co.
Department AC
P.O. BOX 950-M • PASADENA, CALIFORNIA

Parlon® Stays On

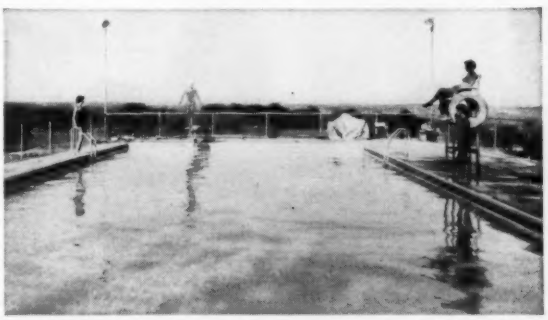
Protects Municipal Swimming Pools

PARLON ON CONCRETE—Since the City of Omaha opened this municipal pool in 1950 it has been kept looking its Sunday Best all season long by RAMUC, a Parlon-based protective coating manufactured by Inertol Co., Inc., Newark, N. J. Omaha's general foreman of maintenance credits this finish with keeping this concrete pool attractive while holding down maintenance and operating costs.

Whether the pool is steel or concrete, municipal maintenance departments heads throughout the nation have found that they can depend on a Parlon-based finish for longer-lasting beauty at lower long-term cost.

Already familiar with the unique chemical and corrosive resistance qualities of Parlon-based coatings for many other municipal uses, these men have found that special Parlon formulations provide the colorful finish they want for pools combined with under-water wearing properties that mean less maintenance cost.

Wherever protective coatings must meet a challenge, whether it be interior or exterior, masonry, wood or metal, look to Parlon for the ideal all-purpose maintenance paint. Your local paint supplier can provide additional information, or write direct to Hercules.



PARLON ON STEEL—This steel pool, too, is painted with RAMUC. Its tile-like finish has withstood the attack of water and water-treatment chemicals without peeling or powdering.

HERCULES POWDER COMPANY

CR56-5

PARLON CHLORINATED RUBBER PAINTS ARE AVAILABLE FROM 400 MANUFACTURERS UNDER THEIR OWN BRAND NAMES

ANNOUNCING THE NEW SHAWNEE® "SCOUT" BACKHOE MODEL D70HL

SALES AND SERVICE — A SHAWNEE — COAST TO COAST

SHAWNEE OFFERS MORE FEATURES FOR LESS MONEY

Exclusive, patented drag line principle produces digging force of approximately 6,000 lbs. at bucket teeth.

Patent Numbers: 2,669,367 and 2,682,346

6-bank, free-flowing valve system—can operate 2 or more at once.

Bucket widths—12" to 24" inclusive. Flat bottom buckets 32" and 36"

DIGS 12 FT. DEEP — LOADS 8½ FT. HIGH

FOR ALL POPULAR MAKE TRACTORS

NEW INDIVIDUALLY CONTROLLED HYDRAULIC STABALIZERS

Now designed with hydraulic "feet" for quick leveling-up to dig plumb holes, new D-70-HL is ready for work **seconds** after the tractor stops rolling. Working on slopes or with one wheel on a curbing makes no difference. Recommended for mounting with the Shawnee "Special" front end loader.

SHAWNEE "SPECIAL" LOADER

Frame slides into permanently mounted "U" bracket.

Chromium-Plated rods, polished cases. (Double acting)

Welded Box Frame

Bucket roll back, down pressure. 2,000 lb. lift

To remove loader, remove frame pins, hoist loader forward and up, then drive tractor away. Takes less than five minutes.

Single or twin bucket cylinders optional.

Perfect team-mate for the new D-70-HL, the "Special" Loader provides a balanced unit regardless of which tool is being used. It has tremendous lifting power—dumps well ahead of the front of the tractor and has powerful down pressure to bite into tough materials.

ATTACHMENTS FOR USE ON ALL SHAWNEE LOADERS

- ANGLE DOZER
- CRANE HOOK
- STREET BROOM
- FORK LIFT
- BULLDOZER
- SNOW BUCKET

541

SALES AND SERVICE — A SHAWNEE — COAST TO COAST

SEE YOUR LOCAL DEALER OR WRITE:

SHAWNEE MANUFACTURING COMPANY, INC.

1947 U. N. TOPEKA AVE. TOPEKA, KANS.

CUT MAINTENANCE COST in HALF with GRACE "EZ-ON" TRAFFIC SIGN FACES:

'EZ-ON' Sign Faces—patented, are made of 30 ga. steel in 3 shapes and 3 sizes—octagon, diamond, rectangular—24" and 30" and 18" x 24". The former in red and yellow, the latter in white only. Standard copy or special—or the rectangular Face blank if you wish. They meet every need—at ½ the regular cost!

3 SHAPES...3 SIZES!

'EZ-ON' Faces slip on right over your present signs—in less than 5 minutes — hence your signs are never out of service. Used by cities and Highway Dept's. all over the United States.

1. Slip 'EZ-ON' Face over old sign. Note wide flanges.
2. Then bend flanges backward holding 'EZ-ON' Face in place.
3. Use Crimping Tool to clamp flange and secure Sign Face.

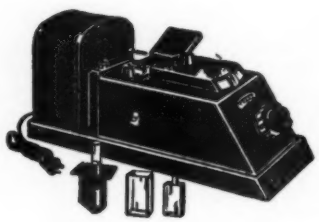
GRACE 'EZ-ON' Sign Faces are reflectorized and meet all specifications for brilliance and reflective qualities. INVESTIGATE . . . and save. Their cost is HALF that of ordinary signs! SEND FOR SAMPLE SIGN.

GRACE SIGN & MFG. COMPANY

3605 S. SECOND ST. Dept. CA ST. LOUIS 18, MO.

KLETT SUMMERSON ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.

179 East 87th Street New York, N. Y.

ADD POWER
and Multiply Sewer-Cleaning Speed

WITH "FLEXIBLE" POWER DRIVE!

A modest investment in a "Flexible" Power Drive gives you these advantages:

- You can clean sewers *five times faster* with less worker fatigue.
- The Power Drive will easily repay its cost in less than six months.
- Speeding up the immediate job releases your crew to engage in sewer maintenance... minimizing emergencies and overtime.

Pat. No's. 2-110,202 • 2,471,060

FLEXIBLE INC.
3786 Durango Ave., Los Angeles 34, Calif.
(Distributors in Principal Cities)

Our representative in your territory will be glad to call and give you more facts about the Power Drive—just one of many Flexible original developments making for faster, safer, more economical sewer cleaning. Or, write for catalog 55-A.

THE GLENFIELD MICRO-STRAINER

A unique solution to water treatment problems

You are cordially invited
. . . to inspect our
7'-6" diameter unit on
display at Booths 36-37
at the
A. W. W. A. Convention
St. Louis, May 6-11

GLENFIELD & KENNEDY, INC.
677 FIFTH AVENUE • NEW YORK 22, N. Y.
Micro-Straining in all its Applications

SAVES $ LOTS OF $

$ . . . on pipe runs under streets, highways, pavement, gardens, etc.

REG. U. S. PAT. OFF.

HYDRAUGER*

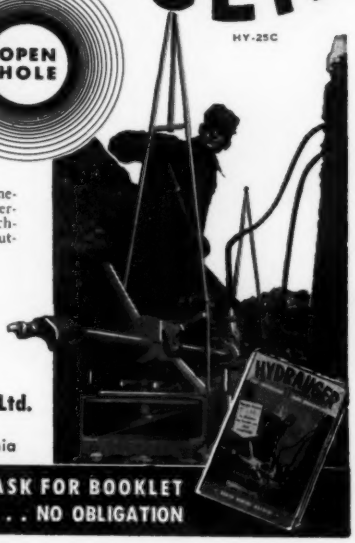
HY-25C

OPEN HOLE

AVOID TIME WASTE

Hydrauger is a modern, time-saving way to install underground pipe . . . avoids trenching, backfilling, pavement cutting, etc.

2" to 24" BITS and REAMERS



HYDRAUGER CORP. Ltd.
681 Market Street
San Francisco, California

**Earth Boring Tool*

ASK FOR BOOKLET . . . NO OBLIGATION

Here's the easy way to get your water bills in their hands on time—every time!

Burroughs Sensimatic Accounting Machine. Its speed with water bills helps you please residents by giving them plenty of time to take advantage of discounts. It cuts your billing costs so low it pays for itself over and over again.

Right now, Water Departments everywhere are saving countless man-hours and taxpayer dollars every billing period. So can you! The method is certainly easy enough: use the Burroughs Sensimatic to handle your complete billing job.

What makes the Sensimatic so ideal for water billing? Simply this. It has *all* the timesaving, worksaving features you need to button up the job right on schedule. Take the all-important *sensing panel*, for example. It automatically directs the Sensimatic through the entire billing operation—yes, reduces the job to almost push-button simplicity.

The operator merely indexes the readings and amounts, touches the motor bar. Then the sensing panel takes over. The original bill, original ledger and running journal are all printed automatically. Could you ask a machine to do more, an operator to do less?

First chance you get, call our nearby branch office for a demonstration. (There's no obligation, of course.) Or write: Burroughs Corporation, Detroit 32, Mich.

"Burroughs" and "Sensimatic" are trademarks

Burroughs

● 99% of Dual service needs can be performed right here, on the street, at the meter, as any service man in a Dual-equipped town will tell you! And if you suspect that this cuts costs . . . you're plenty right!

There never was, never will be a parking meter completely immune to mutilated coins, foreign objects or need for occasional adjustment. And, you might even want to convert the time-coin setup. In any case, there is seldom if ever any need to dismount and lug Duals to a workbench.

The fact is, you ought to know about all the other Dual features that keep operating costs down, revenue up—features found only in Duals—Single and Dubl-Duals, Duals for *any* on-street or off-street requirement there is! Write for bulletins to *The Dual Parking Meter Company* (Subsidiary of The Union Metal Manufacturing Co.), *Canton 2, Ohio.*

for more production

wide work range

low job costs

Set your sights on an HD-6B

45 drawbar hp–55 belt hp–12,400 lb

on-the-job advantages important to

All-steel, box-A main frame — soaks up shock loads.

One-piece steering clutch and final drive housing — line-bored for true alignment of shafts and gears.

Straddle-mounted final drives — with bearings on both sides of gears to maintain gear tooth alignment.

Heavy-duty truck frames — keep tracks in line, reduce wear . . . help get more work done at lowest possible cost.

Allis-Chalmers long-life diesel engine — with follow-through combustion that delivers power for big output with ample power reserve.

Simplified lubrication — including 1,000-hour lubrication intervals for truck wheels, idlers, and support rollers . . . provides extra working time.

and all these exclusive owners and operators:

Unit construction — makes service easier, faster . . . major units can be removed without disturbing adjacent assemblies.

Operator ease and comfort — with foam rubber seats . . . responsive controls . . . full visibility.

Wrap-around radiator guard — serves as dozer lift frame . . . reduces weight and cost, produces superior balance for tractor-dozer.

Engine-mounted bulldozers — direct lift . . . positive down pressure . . . hydraulic straight blade or angle blade.

Plus heavy-duty, tapered roller bearing truck wheels, heavy-duty truck wheel guards, 24-volt direct electric starting, crankcase guard, bumper, and lights at no extra cost.

Check the complete service program offered by your Allis-Chalmers Construction Machinery dealer. His factory-trained servicemen, factory-approved facilities, and stocks of True Original Parts keep your equipment operating properly . . . add up to the kind of service that saves you money.

See your Allis-Chalmers Construction Machinery dealer. He will be glad to show you an HD-6B at work.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

This Winter . . . BE READY TO GO! LICK ICE and SNOW . . .

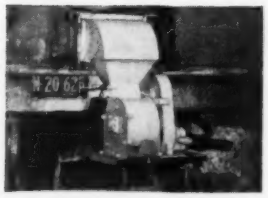
WITH *Baughman*
ICE CONTROL EQUIPMENT

MODEL K4SC Salt and Cinder Spreader
Two-speed transmission for controlled application, thick or thin . . . oil-sealed clutch for spot-spreading . . . patented safety baffles for left or right hand spread (8 to 40 ft.). Two models: Power Take-Off (shown here), and Auxiliary Engine Drive. Write for BULLETIN A-398.

PULL-TYPE SPREADER

Powered by own traction; spreads in complete circle with improved distributor plate only 13" above ground. Includes tow hitch. BULLETIN A-371.

BAUGHMAN SALT MISERS
Two models: *Hydraulic Model 55-H* (shown), cab-controlled; attaches to any hydraulic-lift dump truck; adjustable volume control; directional vanes control spread pattern. *Auxiliary Engine Model 55*, clamps to tailgate of any dump truck. BULLETIN A-401.

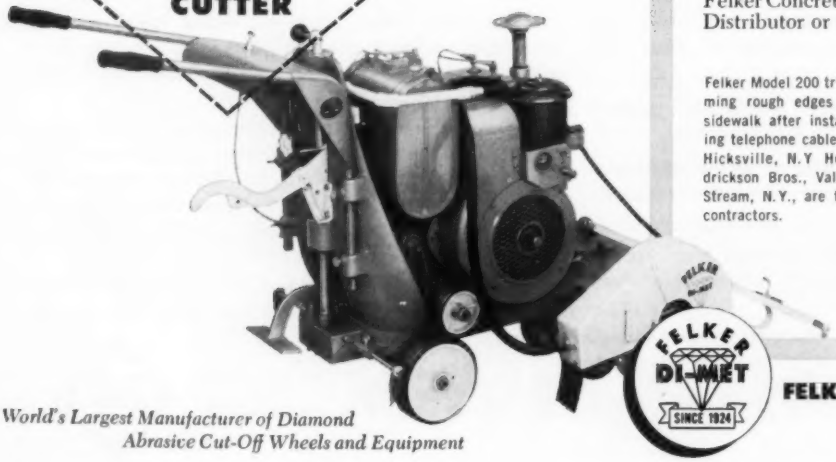


WRITE FOR
ILLUSTRATED LITERATURE

BAUGHMAN MANUFACTURING COMPANY, INC.
150 SHIPMAN ROAD, JERSEYVILLE, ILLINOIS

If you saw only 10,000 feet per year this pays for itself!

FELKER
MODEL 200
CONCRETE
CUTTER



That's a fact! If you pay 15¢ to 18¢ per foot for concrete sawing—a common price for contract work, you can buy a Felker Model 200, equip it with Felker blades and cover labor costs on just 10 days' cutting per year! Check your next years' program—See how much you can save by ordering this low cost machine!

Felker Model 200 is an all-around machine, small enough for good maneuverability, husky enough for heavy production jobs. 13.5 h.p. Wisconsin, hydraulic lift and downfeed to blade. Get our circular on the Model 200 and other Felker Concrete Cutters from your Felker Distributor or write direct.

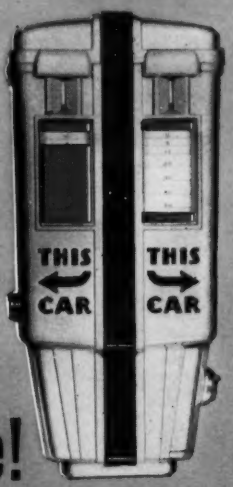
Felker Model 200 trimming rough edges of sidewalk after installing telephone cable in Hicksville, N.Y. Hendrickson Bros., Valley Stream, N.Y., are the contractors.

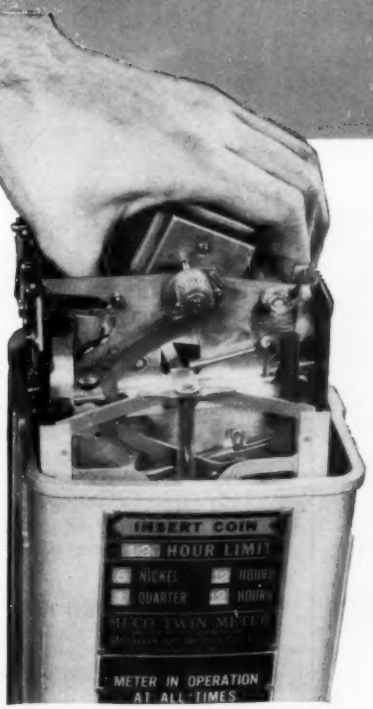
FELKER DI-MET SINCE 1924

FELKER MANUFACTURING CO.
Torrance, California

World's Largest Manufacturer of Diamond Abrasive Cut-Off Wheels and Equipment

Quick Servicing Feature of the MI·CO TWIN AUTOMATIC Assures Maximum Productive Time!





MICHAELS PRODUCTS:

Bank Screens and Partitions
Welded Doors
Store Fronts (special)
Building Skins
Spandrels
Louvers
Windows (special)
Revolving Doors
Stair Railings
Church Work (special)
Candelabras
Name Plates
Letters
Check Desks
Lamp Standards
Marquees
Tablets and Signs
MI-CO Parking Meters
Museum Trophy Cases
Bronze Inurnment Urns
Bronze Vases
Misc. Metal Work

Bronze and Aluminum Plaques

The illustration at the left shows how easy it is to service a MI-CO Twin Automatic Parking Meter. Simply unlock and remove the cover, lift out the works, adjust, replace, lock on the cover. That's all there is to it. The entire mechanism is built in one compact unit with all parts easily and quickly accessible. Adjustments are usually made at the meter location, and the meter is back in operation in a matter of minutes.

This is one of the many features that make MI-CO Twin Automatics your best parking meter buy. They are consistently high producers because maintenance expense is inconsequential. And you can depend on this: MI-COs will continue to be high producers for many years. Reports from cities where MI-COs have been in operation ten years and more reveal that they are still giving new meter performance.

We'll be glad to send more information and MI-CO Meter performance records of many installations.

MI-CO PARKING METERS, P. O. Box 668-A, Covington, Kentucky

(The Michaels Art Bronze Co., Inc.)

MOBILE AS A TRUCK — Here's another trencher for city work. Rubber-tired Trenchmobile® drives around town at 12.6 m.p.h. No waiting for trailer, loading or unloading delays. It's heavy-duty, fits a wide range of applications. Digs 8 to 16 inches wide, 5 feet deep — at speeds up to 14.5 feet per minute. Handles main-line extensions, utility service connections, underground signal and lighting systems. (For largest sewers and mains, check Parsons line of big, crawler Trenchliners® — wheel and ladder-types.)

. . . . . **PARSONS CO., Newton, Iowa** . . . . . .

Send us bulletins on: ☐ *88 Trenchmobile* ☐ *155 Trenchliner*

NAME_____

TITLE_____

DEPARTMENT_____

STREET_____

CITY, STATE_____ CP670 AC

Compact, low and narrow

Look at the low profile of this small Parsons 155 Trenchliner! It's a new size — developed especially for city digging. Height is only 7 feet-4 inches for working under trees, overhanging branches, and other overhead obstructions where larger trenchers can't go. Width over crawlers is only 5 feet-4 inches for operating between buildings, in narrow alleys. Power-shift conveyor avoids side obstructions, places spoil bank on either side of trench.

Digs trench 8 feet deep

For all its compactness and maneuverability, this utility-size 155 has plenty of work capacity. It digs 16 to 26 inches wide, at depths to 8 feet — produces from 5.8 inches to 25 feet of trench per minute. Low speeds let the 155 "inch" its way past cross-pipes, and other obstructions typical of city digging. High speeds give maximum feet per minute on clear right-of-way.

Sloping ladder-boom has positive down-crowd — starts cut fast, holds accurate grade. It undercuts walks, curbs, gutters — makes vertical set-ins flush with walls, existing mains. Heavy-duty 155 also has: cast-steel buckets, "Tap-In" teeth, tractor-type crawlers with 16-in. grouser treads, or 12-in. flat shoes. Call Parsons distributor today for complete facts, or write for bulletin.

PARSONS COMPANY • NEWTON, IOWA
(Koehring Subsidiary)

15-ton lifting capacity
32½ m.p.h. truck speeds

To speed work schedules on widely-scattered lifting and material-handling jobs around town, take advantage of the mobility and *extra capacity* of Koehring 205 Truck Crane. It rolls along over city streets, highways at normal traffic speeds. A job 30 miles away can be started in less than an hour from "now".

Check these capacities:

With one of these Koehring 205 Truck Cranes, you are equipped to lift any load up to 15 tons (based on 85% of tipping load). For high lifts, boom length can be increased from 25 to 55 feet (plus maximum 30-foot jib). Heavy lift capacity and stability increase the 205's work capacity with every attachment. It handles ½ to ¾-yard clamshell or dragline buckets on a wide work radius, converts to ½-yard shovel or hoe.

Before you buy any machine in the ½-yard, 10 to 15-ton class, better check the extra work capacity you can get with this Koehring heavy-duty 205. It's also available on rubber-tired Cruiser® mounting, or on crawlers. Your Koehring distributor has complete information. Why not call him today? Or, write to us for latest 205 literature.

Koehring line also includes 4 larger, heavy-duty sizes of excavators and cranes to fit your needs.

KOEHRING COMPANY • MILWAUKEE 16, WIS.

8 foot-9 inch discharge height
with *bituminous tower loader*

Now you can load bituminous mix into trucks, stockpiles, or discharge into overhead hoppers from ground level. Tower attachment on Kwik-Mix 10 and 14 cu. ft. bituminous mixers gives 7 foot-9 inch to 8 foot-9 inch discharge height. Big-capacity bucket handles a full mixer batch. It is powered by the mixer engine, dumps automatically at top of tower.

There's no delay to mixer production. Bucket travel and discharge are completed while the next batch is being mixed. Tower is easily attached. Top section is hinged, folds back — legs telescope for ample travel clearance.

22 to 30 tons an hour

Mixer is completely flexible to meet varying production requirements and job conditions. It's efficient as a portable, or stationary mix plant — turns out big tonnages. For example, Kwik-Mix 10 cu. ft. bituminous mixer produces up to 22 tons an hour (based on 1½-minute mixing cycle, and aggregates weighing 110 lbs. per cu. ft.) On same basis, 14 cu. ft. mixer averages 30 tons hourly. See Kwik-Mix distributor, or send for catalog. Also check Kwik-Mix 3½-S to 16-S concrete mixers, and Moto-Bug® power-wheelbarrow — 2 sizes with interchangeable hopper, platform, and fork lift.

KWIK-MIX COMPANY • PORT WASHINGTON, WIS.
(Koehring Subsidiary)

in signs...it's what meets the *Eye* that counts!!

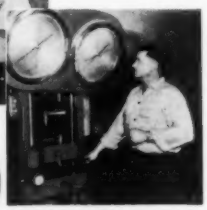
MIRO-FLEX SIGNS
ARE EMBOSSED SO THAT THEY ARE EASY TO READ!

Yes, MIRO-FLEX signs are embossed for greater legibility as well as extra strength. This extra dimension not only makes them more readable, but gives you a quality sign...one that will serve your community well, and provide you with more efficient traffic control. Write today for your free copy of MIRO-FLEX's complete catalog of traffic control signs. There's a sign for every situation.

THE **MIRO-FLEX** CO., INC.

1824 EAST SECOND WICHITA, KANSAS

METALLURGY TESTS



HYDROSTATIC TEST PRESS

APCO

LOAD BEARING TESTS

NOTHING OVERLOOKED!

Produced in a plant as modern as tomorrow . . . Most exacting metallurgical, chemical and physical tests . . . Strict quality control from the raw material to the finished product . . . That's Alabama's Super De Lavaud Cast Iron Pipe.

For long years of dependable, trouble-free service . . . specify Alabama's Super De Lavaud Cast Iron Pipe. Sizes 3" to 24" in modern long lengths. Bell and Spigot, Roll-on-Joint, Flanged, and Mechanical Joint.

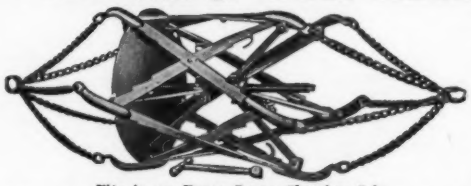
ALABAMA PIPE COMPANY

General Sales Offices
ANNISTON, ALABAMA

We Invite Inquiries to Our Nearest Sales Office

122 S. Michigan Ave. Chicago, Illinois
350 Fifth Avenue New York 1, New York

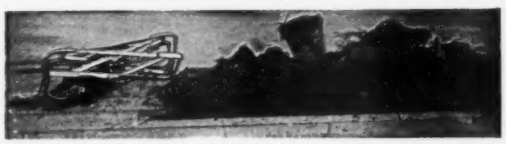
EXPANDING ROOT CUTTER SEWER CLEANER



Fits in on Every Sewer Cleaning Job
Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Open and in action removing roots and caked sediment like this.



Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY

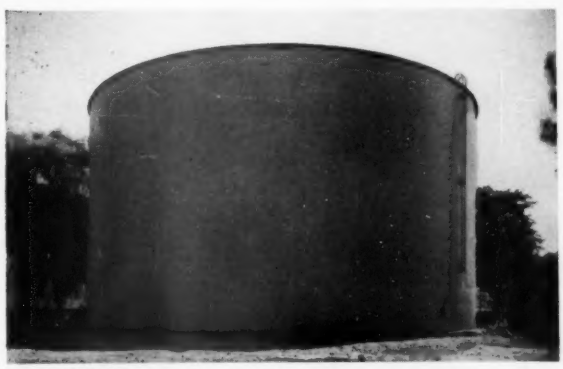
108 East Walnut St. Nappanee, Ind.

WEST WARWICK, R. I.—The Kent County Water Authority is owner of this 1,000,000-gal welded-steel reservoir which was put into service in 1955. The tank measures 52 ft in height by 58 ft in diameter. General contractor for the job was General Engineering & Contracting Co.; engineer was Charles A. Maguire & Associates.

AKRON, O.—A Bethlehem erection crew completed this attractive, 1,500,000-gal standpipe during the summer of 1955. Standing 115 ft high by 47 ft in diameter, it has an elliptical self-supporting roof and is dressed up with an ornamental cornice. Engineering was by the Bureau of Water Supply, W. R. LaDue, Chief Engineer and Superintendent.

Three New Water Storage Tanks

Welded steel tanks have many advantages for the storage of water above ground. They can be made permanently watertight; they are unaffected by climatic changes; they withstand damage due to shock, impact, explosion or surface settlement; they require little maintenance, and often cost less than competitive types of storage.



ROCHESTER, N. Y.—This 1,500,000-gal welded steel reservoir was built for the New York Water Service Corporation, which engineered the job. It is 40 ft high by 80 ft in diameter.

The Bethlehem organization is backed by nearly a half-century of experience in the design, fabrication and erection of storage tanks. Perhaps we could be of service to you. Please contact the Bethlehem sales office most convenient to you.

Bethlehem Tar-Enameled Steel Pipe

The strongest pipe for water and sewage transmission. Leakproof. 40-ft lengths. Diameters 18 in. and up. For decades the preference of leading cities. May we give you more information?

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

"Our TD-6 DROTT® 4-IN-1 can do more city jobs faster and cleaner than any other rig I've seen"

—George E. Davis,
Superintendent of
Sanitation and Streets,
Rockwood, Tennessee
(Population: 5,000)

FIRST **"First we use our Four-In-One in bulldozer, or in clamshell position** to spread or spot-place the mixed rubbish and garbage evenly. We have about 40 packed cubic yards of material to dispose of daily, six days a week."

THIRD **"Third, with Bullclam action,** under accurate *clam lip* control, we spread an even cover of six inches of dirt over each layer of refuse. Because of good compaction of the refuse, and the even spreading of cover dirt, this proves to be about right."

Now, the International Drott Four-In-One is available in three sizes

1 YARD	1½ YARD	2¼ YARD
TD-6	TD-9	TD-14

1-yard TD-6; 1½-yard TD-9; 2¼-yard TD-14. See how your city can beat the material-handling usefulness of a fleet of limited-duty machines—for a Four-In-One's moderate price. See your International Drott Distributor for a Four-In-One demonstration.

SECOND

"Second, we use compactor plate action which the operator gets instantly on the go. He can also apply hydraulic down-pressure to compress bulky refuse into minimum volume, ready to cover. It doesn't take long to really flatten materials like tin cans, cartons, etc."

FOURTH

"Our fourth step is ironing down the cover dirt, again using compactor plate action —this time with the added pressure of a ton of dirt. This makes a rat-proof, odor-proof seal; also destroys fly and mosquito hatcheries. We find, too, this step speeds decomposition of refuse."

4-1

"And for a final cover," adds Mr. Davis, "we apply a two-foot layer of dirt on the completed sanitary fill. Our Four-In-One is mainly used on this work but at times we use it on street work and for back-filling sewer trenches. Besides cutting our old-method refuse disposal time in half, the outfit gives us 4-machine usefulness, to do more city jobs, faster and cleaner, than any other rig I've seen."

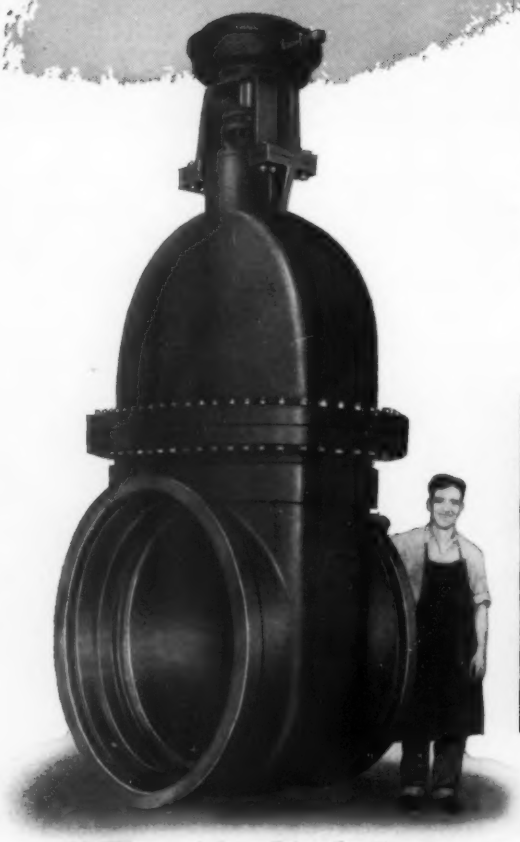
International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 8, Wis.

INTERNATIONAL HARVESTER

INTERNATIONAL®
DROTT

UP TO 72"

LUDLOW VALVES

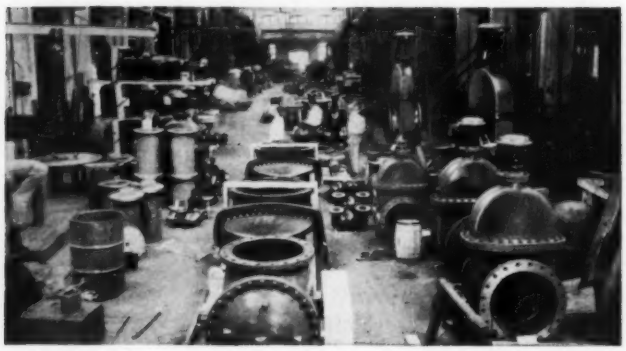


The water supply for thousands of people may depend upon a few large valves which must be reliable. Only a huge, specially equipped foundry, backed by giant tools, in a modern precision machine shop can supply this dependability. Ludlow has been the headquarters for large valves for nearly a Century.

LONG LIFE and DEPENDABILITY are built in. Ludlow Valves are fully bronze mounted. The two piece wedging mechanism is simple and rugged. The double disc parallel seat construction results in a wiping action that cleans the seats during the closing operation. The stems are special high tensile strength Ludlow manganese bronze with precision cut modified acme threads.

"NO POSSIBLE DIFFERENCE IN FIRST COST CAN OVERBALANCE THE PERPETUAL ECONOMY OF QUALITY."

17

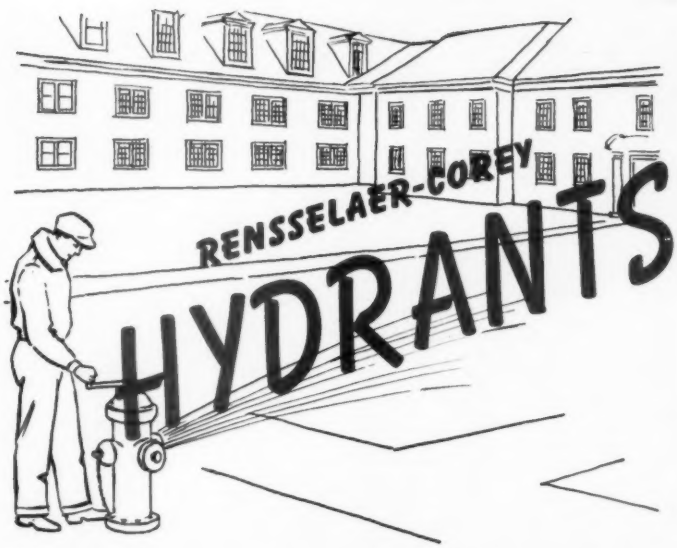


Ask for Bulletin 54W

THE LUDLOW VALVE MFG. CO., INC. TROY, N.Y.

TRADE LUDLOW MARK

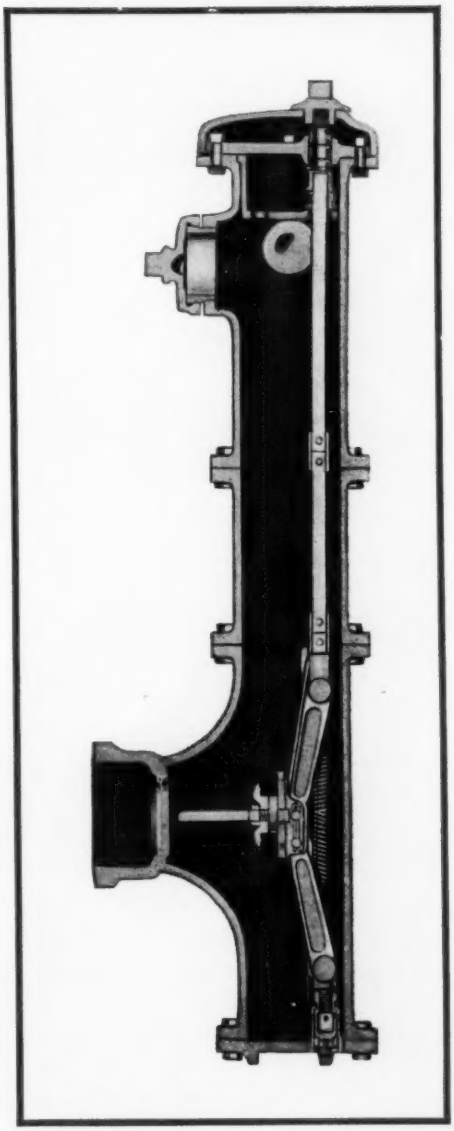
GATE VALVES • FIRE HYDRANTS • SQUARE BOTTOM VALVES
CHECK VALVES • TAPPING SLEEVES • AIR RELEASE VALVES

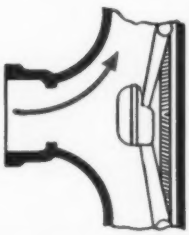


This is the hydrant that has been the standard of excellence in hundreds of cities for many years. Inspectors, maintenance men and fire chiefs, all have their reasons for endorsing the Rensselaer Corey Hydrant.

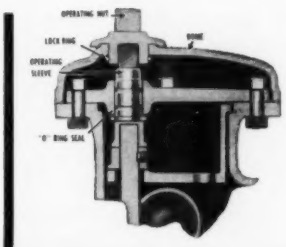
The illustrations show the clear-flow design which insures low head loss and maximum flow. Maintenance men like the simplicity of design and the speed of removing, inspecting and replacing the working parts as a single unit.

This hydrant opens with the pressure, is easy to operate and cannot stick. No digging for repairs, or for standpipe breakage. Now available with any type connection and "O" Ring seal.





CLEAR FLOW
LOW HEAD LOSS



HYDRANT HEAD
WITH "O" RING SEAL

Ask for Bulletin "G"

18

Rensselaer VALVE CO.

TROY, NEW YORK

DIVISION OF
THE LUDLOW VALVE
MANUFACTURING CO., INC.

GATE VALVES • FIRE HYDRANTS • SQUARE BOTTOM VALVES
CHECK VALVES • TAPPING SLEEVES • AIR RELEASE VALVES

THIS OPEN DOOR GUARDS YOUR MOST VITAL SERVICE

Water is your community's life blood. Water meters are universally accepted as the fairest way to charge for water . . . and the only way to keep people from wasting water.

But water meters, being fine instruments, naturally lose accuracy after years of wear. They start to give away revenue. They permit leaks and carelessness to creep back, and pumping costs go up. Eventually the water system cannot cope with the growing demand.

Worse yet, lack of proper income makes people hesitant to act, and water shortages may soon become critical.

How guard against this? Pick meters that stay accurate longer. Set up a good testing and repair program.

Walk into your meter repair shop. Talk to the men whose efforts guard your water supply. Ask them which meter gives highest sustained revenue . . . with lowest repair and depreciation costs. We sincerely believe the answer will be "Trident."

276

NEPTUNE METER COMPANY
19 West 50th Street • New York 20, N. Y.

NEPTUNE METERS, LTD.
1430 Lakeshore Road • Toronto 14, Ontario

Branch Offices in Principal American and Canadian Cities.

neptune

By R. E. EBERT
Water Supply Superintendent
Winston-Salem, N. C.

Winston-Salem, Adopts Automatic pH Control

Electronic controls plus standard gravimetric loss-in-weight feeder, produces effluent of constant pH value

Superintendent Ebert sets the control point of the recorder-controller at the desired pH value of 7.0.

AUTOMATIC equipment can be considered a "by-word" in the water industry. Its application has been widespread, and yet, despite the real need for automatic pH control, little has been done in this direction.

The advantages of automatic pH control, over and above simple pH recording, are numerous. Precise pH control is needed for optimum flocculation. It also is necessary for maximum corrosion protection in the distribution mains, particularly if a sodium hexametaphosphate treatment is used, since a deviation from the proper pH value can nullify the effectiveness of the treatment. Also, and of ever-increasing importance, the industrial users of treated water are demanding supplies that have a uniform pH value. Such industries include textile finishing plants, paper mills, chemical plants, and a host of others.

In spite of the real need for such automatic control, water works engineers, by-and-large, are reluctant to abandon the gravimetric feeder with all its advantages for some other equipment which would more readily lend itself to pH control.

On the other hand, plant operators have never been able to realize the full effectiveness of this basic type of dry feeder because there was no positive and easy way to regulate *automatically* the feed-rate with a pH recorder-controller to obtain a consistent, noncycling pH value of the treated water.

Operators meet changing conditions in the water by manually altering the feed-rate of the machine, and no matter how much attention is given to this operation, variations in pH cannot be avoided. This same condition also applied to the Winston-Salem plant.

New additions to the plant were made about six years ago, and at that time a Bristol pH recorder was installed to record the pH of the water as it left the clearwell to enter the distribution system. An Omega loss-in-weight gravimetric feeder proportions the post-lime to the filtered water.

Case Against Manual Control

Theoretically, the operator could maintain a finished water pH of 7.0 by manually adjusting the post-lime feeder for proper lime dosage as suggested by the readings of the pH recorder. But in actual practice, such was not the case.

First of all, the clearwell is located *between* the point of lime application and the pH measuring point. This arrangement produces a time lag of several hours, making consistent manual control impossible.

Secondly, the water flow-rate varies from a low of about 8 mgd (million gallons per day) to a high of approximately 22 mgd. This wide variation of flow, plus changes in the pH of the raw water, means a continuous adjustment of the feed-rate is necessary to obtain the desired pH of 7.0 at all times.

In addition, chlorination also affects the pH value of the water. Thus, it became apparent that no human operator could expect to hold the pH at a steady value. The Winston-Salem Water Department realized this, and called upon the Bristol company to study the

problem and, if possible, to develop a more accurate method of pH control.

To better understand the problem, one must be acquainted with the plant. Figure 4 shows a block diagram of the flow process at the Winston-Salem plant. Raw water enters the plant from two sources, the Yadkin River and Salem Lake. Thirteen miles of 36-inch concrete pipe connect the Yadkin River to the plant. When the plant draws water from Salem Lake for a week or more, the pH of the river water stored in the pipeline increases gradually, sometimes reaching a value as high as 10.3.

When river water is used, a sudden change in pH occurs when the "stored" water in the pipe is used and "fresh" river water reaches the plant. The pH value of water from both the river and lake also varies throughout the year. All told, the raw water pH over a year's time may vary from 6.6 to 10.3, a sizable change that represents a definite factor in the pH control problem.

Post-Lime Process

Omega gravimetric feeders introduce alum to the raw water as it enters the plant. The alum-treated water passes through a flash mixer into flocculators where a floc develops, which later settles out in the coagulation basin. Here the pH varies from 5.2 to 6.7, averaging 6.0.

Next, the water passes through the filters into the contact well. As it enters the contact well, another Omega feeder handles the post-lime treatment. Fluoride is also added at this point. The chemicals are intimately mixed with the water as it flows through the contact well on to the open clearwater basin. The clear-well effluent receives a post-chlorination treatment and Calgon is added as an anticorrosion measure.

Downstream from this basin, just before the finished water goes into the distribution system, a sample is pumped through a pH electrode assembly and the pH continuously recorded by the Bristol pH recorder.

It was the engineers' opinion that if the pH of the water after post-liming were held to plus or minus 0.2 pH units, the large-capacity clearwater basin would act as a "fly-wheel" to iron out the variations, and the end product would be a finished water having a constant pH value. To accomplish this, it would be necessary to devise a system of automatic pH control, using a standard loss-in-weight gravimetric feeder. As far as was known, a successful system of this type had never been devised.

Chemical Feeder Operation

The gravimetric feeder is an electrically operated vibrating feeder incorporating a balance beam with a motor-driven retracting counterpoise. This constitutes an accurate scale arrangement whereby the entire hopper load of dry chemical is continuously weighed. The counterpoise weight is retracted along the balance beam at a steady rate, on a time-cycle basis. A dial setting, graduated from 0 to 100, governs the percentages of running time of this cycle. As the balance beam is deflected from the balanced state, it sets up an increased vibration that speeds up the rate of feed of the dry chemical. The chemical drops into a reservoir where it is mixed with water to form a solution that, in this case, is introduced by injection into the filtered water as it goes into the contact well.

Getting back to the feed-rate setting of the feeder,

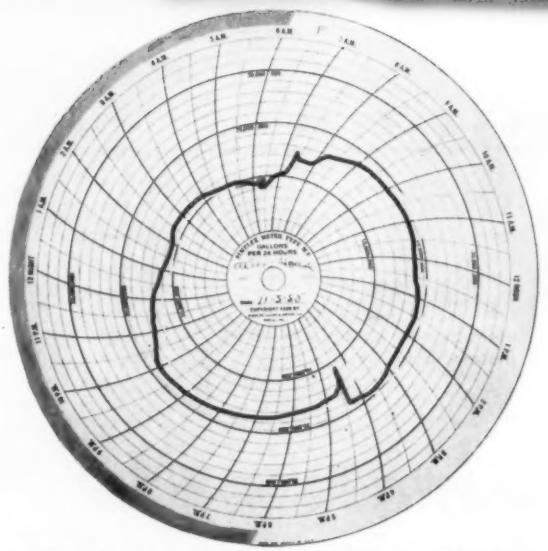


Fig. 1—A 24-hour chart showing rate of flow through the plant.

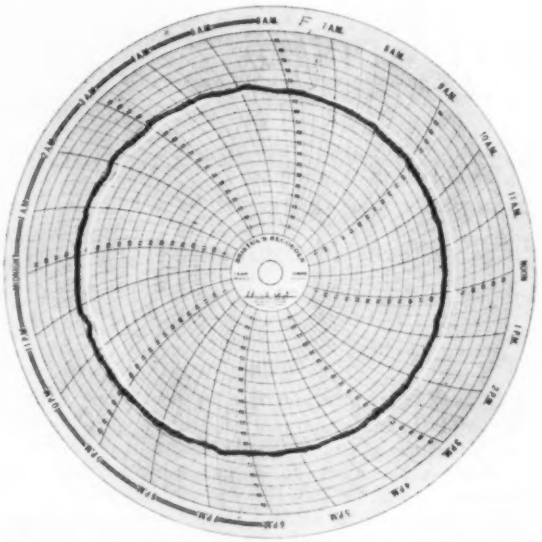


Fig. 2—A 24-hour chart showing pH of water at effluent end of the chlorine contact well. Note the steady record of pH except for two points described in the article.

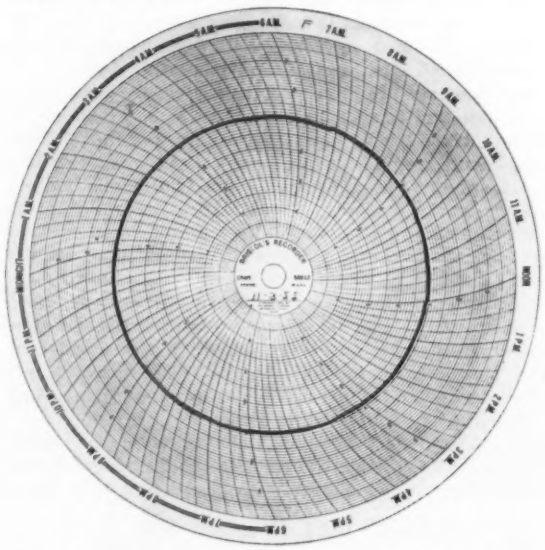


Fig. 3—A 24-hour chart showing pH of finished water at the entrance to the distribution system. Note constant pH value.

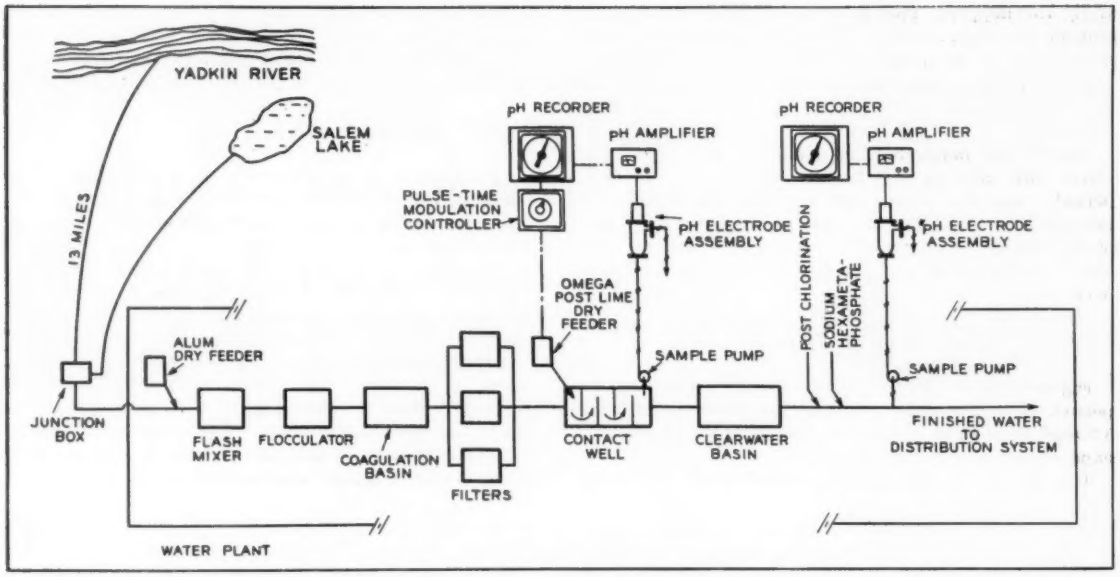


Fig. 4—This block diagram shows the flow of water through the Winston-Salem plant and the pH control points.

the graduated dial, if set at 100, will permit the machine to feed during 100% of the time cycle. If set at 50 or 30, the machine will feed 50% or 30% of the time cycle. If it is set at zero, the machine feeds at a zero rate. In other words, this feeder can be used as a "valve," with the dial setting governing the capacity or "size" of the valve.

Automatic Control

As mentioned previously, lime is fed to the filtered water at the entrance to the contact well. The chemical reaction, and hence the pH, is stabilized by the time the water reaches the end of the contact well. A sample stream of this water is pumped from the end of the contact well to the pH electrode assembly located in the laboratory. The electrodes, together with the pH amplifier, measure the pH value.

The millivoltage output from the amplifier goes to the recorder-controller, a continuously recording electronic Dynamaster potentiometer.

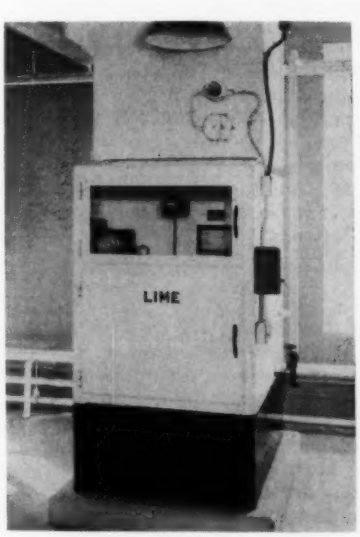
The electronic control system consists of a slidewire in the recorder coupled with an electronic pulse-time modulation controller that incorporates proportional action adjustable from 1% to 100% plus automatic reset. The control energizes, on a time-modulated basis, a relay with contacts wired to the motor-drive of the beam counterpoise in the Omega feeder. This is done through an off-on switch located within the feeder.

When in operation, the control point of the controller is set at a pH value of 7.0, the desired value at the Winston-Salem plant. As long as the recorder registers a pH of 7.0, the controller relay opens and closes on a modulated basis to keep the feeder going just enough to hold the pH at the same value. Should the pH drop, the controller relay stays in to give a longer pulse which in turn keeps the feeder operating over a longer portion of its cycle. A reduction in the feeding cycle takes place when the pH rises above 7.0.

The adjustable proportional band allows the width of the pH control band, over which the pulsing action takes place, to be varied to fit the time lags in the process. The automatic reset permits the controller to continually shift this band up and down the scale as the pH deviates from the control point, so as to oppose the direction of pH change. This tends to keep the pH at the set point.

At the Winston-Salem plant, a proportional setting of 92% on the controller satisfied the time lag of the system. A setting of 20 on the feeder dial is just enough to satisfy the lime requirements under the most severe conditions. With these settings, and with the control point set at 7.0, the desired pH value, the automatic control system maintains an almost constant pH value.

The Bristol system provides virtually straight-line control over a 24-hour period. The slight dip of 0.2 pH units at 10:20 p.m. (Figure 2) occurred when the operator manually shut down the feeder while



The Bristol controller automatically regulates the feed rate of this Omega gravimetric feeder to maintain a constant pH value of 7.0 at the plant.

filling the hopper. This is necessary to prevent plugging of the reservoir by lime which occasionally cascades through the feeder during the filling operation. The chart shows that the pH value returned to 7.0 immediately after the machine was placed back into operation.

During the hours of 1:00 a.m. and 6:00 a.m., the water flow was at the lowest rate for the 24-hour period. The low flow called for the lightest rate of lime feeding which actually required a slight reduction of the feeder dial setting. This resulted in the very slight wavering of the pH line during the five-hour period.

Rate of Flow

Figure 1 shows the flow rate for the same 24-hour period. The rate of flow through the plant varied from 8.3 mgd to 20 mgd, almost the maximum flow variation experienced at this plant.

The pH of the finished water remains at an almost constant value of 7.0. Figure 3 shows the pH recorder chart for the finished water as it entered the distribution system. Note that the three charts were taken during the same 24-hour period. (See page 102.)

Adaptability

The automatic pH control system produces a more uniform value than was expected. Taking into account the fly-wheel affect the clearwell would have in cancelling out fairly large variations, a filtered water pH within plus or minus 0.2 pH units would be satisfactory. However, the system provides a positive and automatic pH control with no deviation. Of equal importance, the system is adaptable to any standard gravimetric loss-in-weight dry-type feeder, the kind that is used in thousands of water plants throughout the country. The development of this all-electronic pH control system enables any water plant to realize the full effectiveness of this type feeder to produce a finished water of almost constant pH value.

One-Man Street Cleaning Crew

ONE man on a machine sweeper is enough to keep 17 miles of streets in Lewistown, Pa., spick and span. He sweeps the streets from midnight to 7:00 a.m. Streets in the main business district are cleaned nightly, in the outlying business twice weekly, and in the residential districts the streets are cleaned weekly.

To make sweeping effective, the borough has established certain parking bans that give the operator a cleared gutter. Parking is prohibited in the downtown area after 3:00 a.m. In the residential areas it is required that cars be off the streets on those nights machine-sweeping is scheduled.

The Police Department does, however, issue parking permits to those who request permission to leave their cars on the street on a sweeping night. And if an offender is a nonresident, unaware of the sweeping schedule, the ticket issued is voided and the offender is provided with a sweeping schedule.

Operating Technique

The operator drives the sweeper with each hopper load of debris to the dump about a half mile distance. He usually dumps two hopper loads each night. He is also responsible for all maintenance and repair work, including steam cleaning and washing of the sweeper. These tasks are undertaken during the day on overtime hours by the same operator of the machine.

The sweeper will be operated 27 days per month, summer and winter, if weather permits. The rear broom has Calabar brass fibers. When the broom needs winding it is generally done by men in the borough maintenance shops.

The machine sweeper operates along approximately 14 curb miles each night. The operator carries a hand broom on the sweeper and dismounts to use it in areas that are inaccessible for the sweeper brooms.

In the fall, he mounts a leaf broom on the sweeper and piles leaves for other crews to pick up during the day. This is the only time he has other men help him, except when he may have substantial overhauling work.

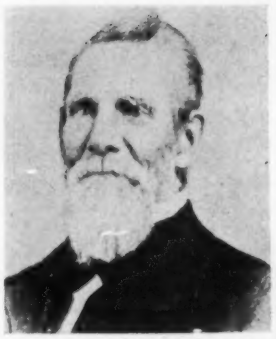
The street-cleaning program is under the general jurisdiction of Bernard L. Marsh, borough manager. The operator is Clyde E. Bailey.

This machine and operator are responsible for picture streets in Lewistown.

W. C. Stripe
Founding father of the AWWA

The American Water Works Association Celebrates Its 75th Anniversary

From an original membership of 24 men, the organization now boasts a membership exceeding 10,000 members



Colonel J. T. Foster
First president of the AWWA

ON January 18, 1881, Mr. W. C. Stripe, superintendent of water works, Keokuk, Iowa, sent the following letter to a group of prominent water works men:

Dear Sir:

Having been requested to take the initiative in calling a convention of superintendents of western water works, you will confer a favor by advising me by return mail whether the project meets your approval—whether you will attend, and at what city you would prefer the convention to be held.

Respectfully yours,

In 75 years this "project" grew into an organization comprised of 10,679 members as of February 29, 1956. The American Water Works Association is the fourth oldest scientific society in the Engineers' Joint Council, preceded only by the American Society of Civil Engineers, The American Institute of Mining and Metallurgical Engineers, and the American Society of Mechanical Engineers.

Only 24 men were present at the first meeting, held at Engineers Hall, Washington University, St. Louis, on March 29, 1881. But these were men of vision and action. Following Mr. Stripe's opening announcement setting forth the causes that lead to the call, the group elected J. T. Foster of Chicago as president.

Other action taken at that first meeting included the appointment of a five-man committee to draft a constitution and by-laws and a three-man committee to report on subjects for the next days discussion. Thus started the organization that grew into the largest group of professional water works men in the world.

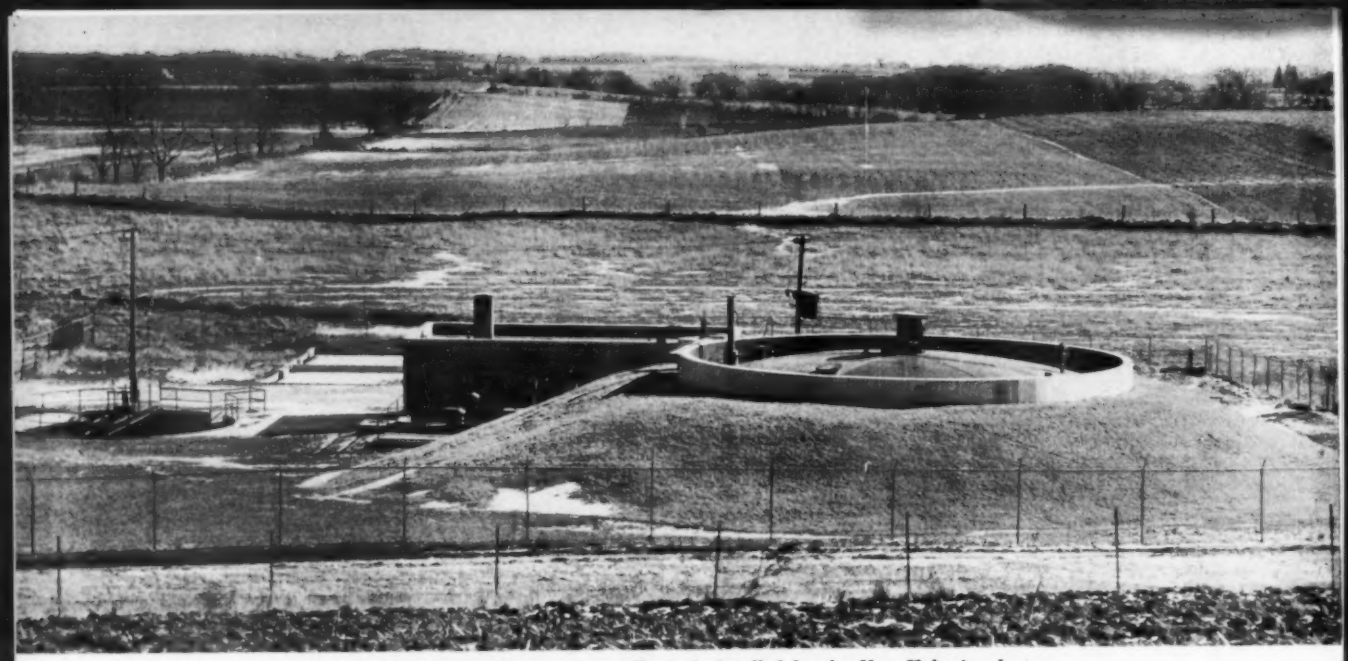
For the next 33 years, the Association met in convention once each year and published an annual volume of proceedings. In 1912 the Association was incorporated in the State of Illinois, and in 1914 authorization was granted to form sections. The New York-New Jersey Section was the first one to be organized, soon followed by the original Iowa Section. Today there are 30 sections in the United States, Canada, and Cuba.

The year 1914 also saw the establishment of the *Journal*. It first appeared as a quarterly, then as a bimonthly publication. The *Journal* now appears 12 times a year, a policy adopted in 1925. Today, the Association sponsors two periodicals, the *Journal* and *Willing Water*, and is also responsible for the *Directory*, numerous books, manuals, specifications and other literature of importance to the water works industry.

Much of the credit for the success of the Association goes to its present Secretary, Mr. Harry E. Jordan. It was on January 1, 1936 that Mr. Jordan left his position with the Indianapolis Water Company as Chemist and Engineer and took over the Association Secretarial duties. For over 20 years he and his staff have spearheaded many advances in the water-works field that have helped make the Association strong.

This month the American Water Works Association again returns to St. Louis to celebrate its 75th anniversary. During the week of May 6-11, several thousand members will gather to discuss their problems and report their findings. Old Engineers Hall no longer stands, but the men of vision who met there 75 years ago to form the organization will never be forgotten. This is constantly illustrated by the well-attended section meetings in all parts of the country. Although the St. Louis meeting will bring out many reflections of the past, the problems of the present and foreseeable future will be uppermost in the minds of those attending.

Engineers Hall, Washington University, birthplace of the American Water Works Assn.



Hard-to-treat canning wastes are effectively handled by the New Holstein plant.

Untemperamental . . . Activated Sludge

Rotating, draft-tube, mechanical aerator brings cost savings and good performance to small city with difficult cannery-waste

By **PAUL LANGENFELD**
Mayor, New Holstein, Wis.

NEW Holstein is a pleasant, prosperous industrial community located in the heart of the dairy region of eastern Wisconsin. Although it has a population of only 2,000, its sewage treatment problem was that of a city many times its size.

The town's sewage flows through a small drainage ditch for several miles to the Manitowoc River and eventually into Lake Michigan. During the winter and spring seasons, the sewage consists mainly of domestic waste and some industrial wastes from a creamery and small slaughterhouse. But during the summer and fall, when the drainage ditch to the Manitowoc River is practically dry, a vegetable and fruit cannery vastly increases the industrial waste load. The maximum load during the canning season reaches an equivalent of over 15,000 people.

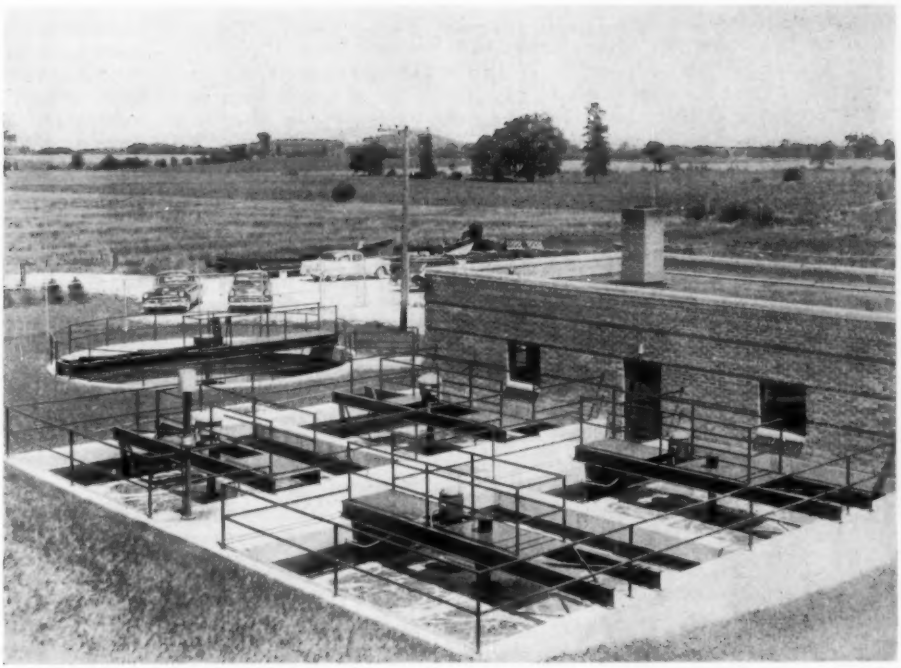
Treatment Plant Inadequate

The city had a small chemical-precipitation, sewage treatment plant, with lime as the coagulating agent. However, this type of treatment was deemed inadequate by the State Board of Health and the State's Committee on Water Pollution. Their requirements call for an effluent that has a 5-day BOD under 20 ppm (parts per million).

To meet this standard, the city, on the advice of Foth & Porath, Inc., Consulting Engineers, Green Bay, Wis., proposed the installation of an activated sludge plant using the "Cavitator System," a mechanical aeration process that had been under development since 1950. The system had been tested in pilot-plant operations, handling various industrial and domestic wastes. In 1952 pilot plant operations at New Holstein produced results so favorable that the engineers estimated the cost of a complete "Cavitator" plant that would handle the normal city load, plus the industrial waste from the canning plant, to be less than the cost of a conventional filter plant for the normal city load only.

The State Board of Health agreed to the construction of the "Cavitator" plant on an experimental basis only, making provisions to protect the city by bond in case the full-scale operation should not produce the required effluents. City officials agreed to this arrangement because of the large potential saving in construction of a plant that would provide adequate treatment for domestic and industrial wastes.

The plant is designed for a flow rate of 450,000 gpd and a BOD load of about 2,000 pounds per day. Plant



The Cavitators can be operated as two-stage units or in parallel and the number of units in operation can be varied according to sewage load.

facilities include a Chicago Pump Company Comminutor, a mechanically equipped primary settling basin 26 feet in diameter, four aeration tanks, each 16½ feet square and 10 feet deep, a final mechanically-equipped settling tank 26 feet in diameter, a 45-foot-diameter sludge digester 19 feet deep, and sludge drying beds with a total area of 10,500 square feet. A service building about 30 feet by 40 feet, with a full basement, houses the laboratory, heating facilities, sewage lift pumps and sludge pumps.

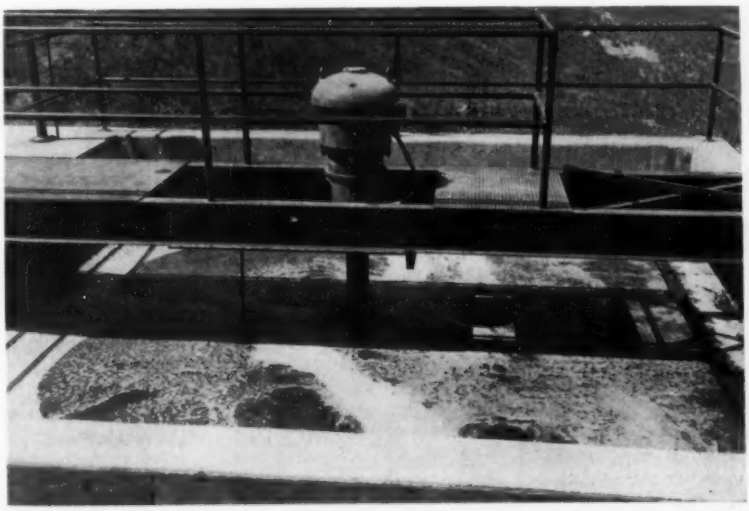
Of the four aerators installed, two were originally used in the pilot plant operations. Yeomans Brothers Company redesigned and rebuilt these units and also supplied the Cavitators on the third and fourth tanks. Ten-hp motors drive the rebuilt units and 7½-hp motors drive the new units. The primary and final settling tanks provide an overflow rate of about 950 gallons per square foot per day at design flows with a detention period of 1½ hours for each unit. Mechanical equipment for these units was furnished by Yeomans Brothers Company.

Recirculation Provided For

Provisions were made for the recirculation of effluent to provide an even higher degree of treatment during periods of low flow. However, in actual operations during a period of about 15 months it has not been necessary to make use of these recirculation facilities, for the BOD's of the effluents have been below the standards originally set up. Plant design provides that the sludge from the final settling tank be pumped to the Cavitators with the amount of return controlled, and the waste sludge returned to the primary clarifier influent line or to the digester. A time clock regulates operation.

The four Cavitator units are connected in such a manner that one, two, or four Cavitators can be operated simultaneously, depending on the load to be handled. They can also be operated as two-stage units or in parallel. At design flows the detention period in the Cavitators averages about four hours. However, the plant has operated for months with domestic sewage using only one unit providing a detention period of about two hours. This arrangement still produced an effluent with a BOD of about 20 ppm.

The plant went into operation with



The draft tube produces a vertical mixing effect that destroys foam as it is formed.

two Cavitator units in April 1954. The other two Cavitators were installed in July of 1954, too late to test the full plant on pea canning wastes produced during the 1954 season. The plant did handle the bean and apple canning wastes in the fall of 1954 with only two units in operation. The plant handled domestic sewage during the winter of 1954-55 and spring of 1955 with only one Cavitator. Throughout that period, our engineers tested the plant influent and effluent and determined the BOD for the plant effluent to be consistently below 20 ppm. In June 1954, the Wisconsin State Board of Health conducted an official test on the operation of the plant with domestic sewage. Results of this test indicated a final effluent BOD of 10.3 ppm, from a raw sewage having a BOD of 260 ppm, better than 96% reduction in the BOD load.

When the pea canning season started in June 1955 all four Cavitators were placed into operation to provide a total air capacity of 130 cfm. Although BOD loadings were high, reductions averaging about 95% were obtained throughout the pea canning season. Final effluent contained dissolved oxygen at all times, and sanitary conditions were maintained in the outfall ditch throughout the season. At no time did the plant experience foam troubles.

Cavitator Advantages

Laboratory tests made during the past 15 months of plant operation indicate that very good BOD reductions can be obtained with Cavitator tank capacities as low as 5 cu. ft. per lb. of BOD removed and with an air supply as low as 120 cu. ft. per lb. of BOD removed. Power consumption is about 0.375 kwhr per lb. BOD removed.

In the Cavitator system, the oxygen absorption and utilization rate is greatly accelerated, resulting in a shorter detention period needed for the treatment of liquid wastes. The Cavitator mechanism produces gaseous diffusion under reduced pressure conditions resulting in a rapid and continuous exchange of oxygen between the air bubbles and the surrounding liquid. Oxygen utilization with Cavitator equipment is at least 50% of the available oxygen in the air in contrast with only 5% utilized with conventional diffuser equipment.

The complete Cavitator unit consists of a vertical draft tube with lower diffusion plate. The draft tube has openings for connection to the influent waste pipe. The rotor assembly is of the multiblade type, supported by an adjustable-ball thrust bearing mounted at the drive motor level. It is mounted on a stainless-steel hollow shaft, and the entire unit, including draft tube, is supported from a structural steel bridge.

How It Works

When the rotor exceeds a certain critical speed, air drawn from the atmosphere through the vertical hollow tube is diffused into the liquid. The rotor blades create a zone of cavitation in their turbulent trails allowing the air to fill the reduced pressure areas. The moment the air leaves the rotor blades, it undergoes a considerable change in pressure, and is finely dispersed by the turbulence. At the same time, the rotor also acts as a pump, pulling the mixed liquor, down the draft tube into the cavitation zone, where it is intimately mixed with the fresh air that has entered through the hollow shaft. The mixed liquor is made up of raw sewage and sludge from the final clarifier. As the complete contents of the tank starts rotating, the surface of the liquid takes on the shape of a shallow cone, with the lowest part of the cone at the draft tube. This produces an overflow into the draft tube, creating a vertical mixing effect that continuously destroys foam which may form on the surface by floating it into the draft tube. The amount of air being entrained depends on the shape and size of the rotor blades, speed of rotation, and their submergence in the liquid.

Results

Full-scale plant operations for a period of over 15 months at New Holstein points out numerous advantages of the Cavitator system. Handling both domestic and concentrated industrial wastes, the system is capable of producing a BOD reduction averaging 95%, with detention periods of four hours or less in the aeration tanks, and an air supply as low as 120 cubic feet per pound of BOD removed. Power requirements for the Cavitator equipment amount to approximately 0.375 kwhr per pound of BOD removed.

Except for the necessary adjustments of the amount of waste sludge, operations have been nearly automatic and foaming problems have not entered the picture. The plant has handled great variations in load from day to day without "upsets." Of considerable importance are the lower construction costs resulting from the use of smaller aeration tanks permitted by the Cavitator system.

Curfew Alone Is Not Enough to Curb Delinquency

MUNICIPAL AUTHORITIES have widely divergent viewpoints as to the effectiveness of curfews in dealing with juvenile delinquency. However, the American Municipal Association states that most authorities seem to agree that a curfew is not effective unless there are also provisions for recreation programs and for examining conditions that cause young people to behave in an antisocial way.

Only in extreme cases where delinquency is completely out of hand is a curfew verging on martial law temporarily recommended. Severe curfews restrict the entire youth population, whereas only a small proportion of children is delinquent. Therefore, special provisions must be made for young people out on legitimate errands or activities. Further, illegal activities may actually increase behind closed doors and may also thrive abroad during the day and over week-ends.

Florida Cities Having Curfews

In summarizing these facts the American Municipal Association reviewed data revealed at a recent meeting of the Florida Children's Commission. Of the 260 Florida municipalities questioned, 57 have curfew ordinances. The first was enacted in 1912, the most recent in 1955, and the largest number was put into effect in 1943—apparently stimulated by war-time conditions. Most ordinances required children under 16 or 17 to be off the streets at night by 10 o'clock.

The AMA states that some municipal leaders believe that curfews are useful chiefly to focus public attention on the desirability of keeping children off the streets at night.

It Also Loads Leaves

Rochester, N. Y., uses equipment that normally picks up snow, sand, and gravel to clear its streets of leaves in the fall

The loader picks up the leaves handily from the street.

ESTHETICALLY, trees add dignity and beauty to any city. They, of course, must be well formed, and properly landscaped so that they do not interfere with traffic, street lighting, and other necessary city functions. Under these favorable conditions, Chambers of Commerce will extol the beauty of wide, shaded streets. The public also will express strong approval, as it feels a neighborhood reaches the acme in attractiveness and stability when its street trees have branches that can arch across the pavement, making a leafy passageway.

However, other departments of a city's government do not always share this lyrical appreciation of these trees. Trees are beautiful in the spring and summer. But in fall, when they shed their leaves, they mean nothing but work and often trouble.

They frequently harry the life of the Fire Department. Householders will rake the leaves in piles at the curb. Along comes a passing motorist, flips out a cigarette and soon it's a problem for the nearest fire station.

Even more frequently, they annoy the street and sewer departments. An autumn downpour will carry the leaves to the nearest catch basin where they will plaster it shut, creating flooded streets, and, often, flooded basements. As part of good municipal housekeeping, the leaves have to be picked up efficiently.

Rochester has its full quota of broad avenues arched with greenery. By the same token, it can expect to see lawns, parkings, and gutters thick with fallen leaves, after the first frost. Under the direction of F. Dow Hamblin, commissioner of public works, the city has mechanized the work, using Barber-Greene conveyor-type loaders.

Commissioner Hamblin has divided the city into 11 sweeper districts, with each containing 125 curb miles, or 62½ linear miles of streets. Eight of these districts have streets especially thick with trees. Consequently, each of these eight districts is assigned a Barber-Greene Model 544 loader. This unit is self-propelled, mounted on rubber tires. It uses a twin-spiral feeding mechanism that forces the leaves into the bucket conveyors. These in turn lift the leaves onto a swinging belt conveyor, hydraulically controlled both in elevation and traverse, that deposits the leaves into trucks. Side boards are fitted along side the conveyor during windy weather.

This, of course, is not the normal use for loaders of this type. Generally speaking, the city uses them to load snow. By replacing the buckets with drag flights, they can handle bulk aggregate such as sand, gravel, or crushed stone. Experience has shown that they can handle dry, wet, or frozen leaves with about equal facility. Rochester started the program with five loaders, and later purchased three more.

Each machine has its operator, a crew of three laborers, a foreman, and as many trucks as it can load conveniently. Early in the year, before the leaves have fallen completely, only three trucks may be required per machine. Later, this may be boosted to a maximum of five, each holding 6 to 8 yards. However, the city currently is developing a 16-yard truck body that may reduce the number of trucks needed.

The city asks the householder to rake the leaves onto the parking, or the area between the curb and the sidewalk. Laborers rake the loose leaves off the parking into the gutter where the loader picks them up. In addition, the laborers pick up the heavy branches and brushwood that might clog in the loader mechanism.

The loaders start to work with the first frost and make three complete passes during the leaf season. Each pass takes from 10 to 15 days. The whole cleaning operation is encompassed by six or seven weeks.

The loading program has eliminated 75% of the leaf complaints; moreover, it gives the added advantage of a large fleet of loaders when the snow starts to fall. Each machine can load snow at the rate of 7 to 11 cubic yards per minute.

Assisting in the development of the program are John Lewis, Jack Gallivan, and Frank Vicaretti. Mr. Vicaretti, superintendent of street cleaning, is in personal charge of the work. As a sidelight, he has interested local greenhouses, florists' suppliers, and some truck gardeners in the leaves for mulching purposes, thus simplifying the disposal aspect of the program.

Left, fig. 1
Workmen first place the saddle and the gland for the corporation stop.

Right, fig. 2
Next, they attach the corporation stop and the drilling machine to complete the tap.

Tapping Prestressed Concrete Cylinder Pipe Under Pressure

Service taps in prestressed concrete cylinder pipe are considered routine—large taps present no difficulty

By K. B. EARNHARDT, *Assistant Manager*
and J. F. HASKY, *General Foreman*
The Alexandria Water Company
Alexandria, Va.

TO meet the ever-increasing need for water, the Alexandria Water Company developed an entire, new source of supply on Occoquan Creek in the southeastern portion of Fairfax County.

This project, constructed in 1949-50, required approximately 15 miles of transmission mains to connect the new plant with the distribution system in the City of Alexandria. At that time, the company selected prestressed concrete cylinder pipe with rubber and steel joints for the transmission mains. Thereon, the Alexandria and Virginia Water Companies have installed approximately 105,000 feet of 30-inch, 54,000 feet of 24-inch, 24,000 feet of 20-inch, and 16,500 feet of 16-inch concrete pipe.

Prestressed concrete cylinder pipe describes pipe with a steel cylinder. The inner wall of the steel cylinder is lined with concrete and the outer wall of the cylinder is wound with a high tensile steel wire that places the steel cylinder and the concrete core in compression. The prestressing wires are then coated with a concrete mortar. This enables the pipe to carry water under normal operating pressures with the concrete core still under compression.

Prestressed concrete cylinder pipe utilizes the high compressive strength of concrete and the high tensile strength of steel. This method of construction also gives the pipe added "beam" strength to resist breaking. The steel cylinder also serves as a positive water stop.

Water Suppliers

The Alexandria and Virginia Water Companies, incorporated in 1851 and 1949, respectively, supply the City of Alexandria and the eastern portion of Fairfax County, Va. This district, located across the Potomac River from Washington, D. C., is one of the fastest growing residential areas in the United States. In 1955, the two companies installed nearly 3,700 new services. Both are subsidiaries of the American Water Works Company and are under the management of Howard C. Richards.

The original design of the transmission main provided valved outlets varying from 6-inches to 16-inches in size at all intersecting streets and highways, and 1-inch service outlets for all existing residences. It was inevitable that new houses would be built along the highways where transmission mains were laid, and that new subdivisions and new streets would be opened in undeveloped tracts and farmland areas. This necessitated making taps for service connections and taps of large diameter for distribution mains.

Our pipe supplier furnished the necessary tapping assemblies and detailed step-by-step instructions for making the taps. The supplier also offered to send an engineer to supervise the first taps, but it was readily apparent from the simple assemblies and clear instructions that our own forces could make the taps unassisted. The first service tap was made in 1951. To date, our service installation crews have made a total of one hundred and thirty ¾- and 1-inch taps in pipe 20, 24, and 30 inches in diameter.

The tapping assembly consists essentially of three parts: the U-bolts

that fit around the circumference of the pipe and secure the saddle; the saddle which holds the gland; and the gland into which is screwed a standard corporation stop.

The U-bolts are bent so that the ends are roughly parallel and placed around the pipe. A thin layer of cement mortar is placed on the surface of the pipe if it has any irregularity, and the saddle is then bedded in this mortar. With the saddle in position, one end of each U-bolt is placed through the hole in the saddle and fitted with a washer and nut. The other end of each U-bolt is then sprung into position through the hole in the saddle and likewise fitted with a washer and nut. As the nuts are tightened, the U-bolts are struck with a hammer to obtain continuous bearing against the pipe.

The next step is to chip away all of the concrete mortar down to the steel cylinder and to make it even with the hole in the saddle. At this point, the tapper removes the prestressed wires by nicking them with a cold chisel until they snap. Care must be taken not to damage the steel cylinder. The exposed section of steel cylinder is cleaned to secure a good bearing surface for the gland gasket. We then "wipe" the circumference of the chipped opening with neat cement mortar to fully protect the steel cylinder.

After threading the stud bolts into the saddle and tightening them securely, the rubber gasket is placed in the recessed end of the gland and the gland inserted so that it is against the cylinder. (See Figure 1). Nuts are then threaded on the stud bolts and drawn down to compress the gasket tightly against the cylinder to form a watertight seal. The tapper then screws a standard corporation stop into the gland and makes the tap with a drilling machine in the usual manner. (See Figure 2). Instead of flushing the corporation stop at this point, we prefer to connect the copper service pipe and then flush at the curb stop.

A tungsten, carbide-tipped drill is recommended for the drilling operation. However, a set of two drills has recently been developed for this operation. One drill of the set is a high-speed type for the steel cylinder and the other, a solid-tip carbide masonry drill for the concrete. This set has the advantage of being much less expensive than the single tungsten carbide-tipped drill.

After making the tap, the U-bolts and saddle are protected with neat cement mortar. The diaper cloth with steel arches that comes with the tapping assembly is placed around the pipe and cement mortar is poured into the opening to surround the U-bolts. The saddle, stud bolts, nuts, and gland are handplastered with mortar up to the base of the threads of the corporation stops.

Figure 3

For large taps a larger saddle is required, with more U-bolts to hold it.

Figure 4

Next, the valve is put in place ready to receive the tapping machine.

A Routine Installation

We consider ¾-inch and 1-inch taps on prestressed concrete cylinder pipe to be routine installations. Our crews face the same problems that confront them when tapping pipe of the same diameter made of any other material. In fact, since the corporation stop is in place before the pipe is actually tapped, there is no concern about a bad tap or the malfunctioning of the tapping machine. This is an important factor when tapping transmission or feeder mains, since risk of a shutdown is eliminated.

Large diameter tapping assemblies are also furnished by the pipe supplier. We made our first large diameter tap in 1952, a 6 inch tap in a 30-inch main. Our most recent was a 12-inch tap in a 30-inch main, made late in February of this year. The Virginia Water Company has made a total of 10 large diameter taps as follows: four 6-inch taps in 24-inch pipe, two 8-inch taps in 24-inch pipe, one 12-inch tap in 24-inch pipe, two 6-inch taps in 30-inch pipe, and one 12-inch tap in 30-inch pipe.

Large diameter tapping assemblies are essentially the same as the small units except that the gland is flanged to receive the flanged tapping valve. Tapping procedure is different.

Rubber gaskets are wired to the underside edges of the saddle through the holes provided at the neck and along the perimeter of the saddle. We then place the saddle on the pipe with the grout holes facing upward, and secure it with the U-bolts circling the pipe. The nuts are tightened lightly to seat the saddle against the gaskets and seal

Left

Assistant Manager K. B. Earnhardt checks the core. Note the perfect condition of pilot drill and cutter after tap has been made.

Right

J. H. Hasky, general foreman and co-author, inspects a completed installation.

the space between the saddle and the pipe for grouting. (See Figure 3). As the nuts are tightened the U-bolts are struck with a hammer to obtain continuous bearing against the pipe.

Next, a grout of neat cement of fluid consistency is poured through the grout holes. We plug the weep holes at the bottom of the saddle when the grout starts to drain through them, and continue pouring until the grout reaches the top of the pouring holes. The saddle is struck with a hammer during the grouting operation to eliminate any air pockets and voids in the limited space between the saddle and pipe. After the grout has taken its initial set, the saddle is snugged up tightly by tightening the nuts and again hammering the U-bolts to get good bearing.

Air Test

Then we chip away all of the concrete mortar down to the steel cylinder and even with the edge of the hole in the saddle. We remove the prestressed wires by cutting them in the center with a cold chisel, nick them at the edges of the hole, and then bend them until they snap. During this procedure, close attention must be given so as not to damage the steel cylinder and to make sure that the surface of the cylinder is clean in order to provide a good bearing surface for the gland gasket.

At this point, we "wipe" the circumference of the chipped opening with neat cement mortar to fully protect the steel cylinder, and again tighten the U-bolts. With the rubber gasket in place in the groove of the gland, the gland is inserted through the neck of the saddle and secured by the stud bolts and nuts. We then tighten the nuts on the stud bolts to compress the gasket uniformly against the cylinder and insure a watertight seal.

To test the tap, a blind testing flange, furnished by the supplier, is bolted to the gland flange and a pressure gauge attached to the testing flange. We then test the tightness of the gland by applying 90 to 125 lbs. of air pressure for a period of 5 to 10 minutes. We have not experienced leakage on any of our installations when this test was applied.

In the next step, the tapper places a diaper cloth around the gland and saddle flanges and pours a grout of neat cement into the space between the neck of the saddle and the gland, including the space between the flanges. This grout is allowed to set up before the tapping operation is started. For taps 12 inches in diameter and smaller this grouting can be done after the tap is made. The tapping valve is now bolted to the gland.

At this point, we prefer to encase the U-bolts and saddle in concrete, using about 1 or 1½ yards to "back up" the pipe and to "block up" under the pipe and valve. After this concrete has set up, we put a shim under the valve so that it is well supported. The tapping machine is then attached and the tap is made in the customary manner. (See Figure 4). One precaution to be noted is that the back of the tapping machine should be adequately supported. A carbide-tipped cutter should be used. We have found it economical to purchase a 6-inch cutter for the number of taps we have made and propose to make, and to rent larger size cutters.

Our crews have found that making taps on prestressed concrete cylinder pipe is no more difficult or time-consuming than making taps on any other kind of main. It is worth noting that the tapping assembly described above has one rubber gasket-sealed watertight joint. This joint is located between the steel cylinder and the gland. This mechanical-type joint eliminates the making of poured and caulked joints commonly associated with tapping operations. Mr. Hasky or his subforeman, F. C. Dowdy, supervise the installation of all large taps.

Satisfactory Results

Over a period of five years, the Alexandria and Virginia Water Companies have made a total of 130 service taps and 10 large diameter taps in prestressed concrete cylinder pipe. During this time we have noted a continuous improvement in the design and manufacture of the tapping assemblies furnished by the pipe supplier. The use of these tapping assemblies is safe, dependable, and economical, both as to material cost and installation cost.

All predictions indicate a continued rapid residential growth in this area of Virginia adjoining our nation's capital. The Alexandria Water Company and the Virginia Water Company will continue to expand to meet the area's need for water service and will continue to make service taps on prestressed concrete cylinder pipe mains for individual service connections and large diameter taps for new distribution mains.

Alleys and garbage collection areas receive the spray treatment six times a season.

War on Flies

An all-out campaign of better sanitation and insecticide sprays is adopted

By JOHN B. WENTZ
Administrative Officer
Beverly Hills, Calif.

BEVERLY Hills declared war on flies back in 1954. This was no "brink of war" diplomatic negotiation, but an out-and-out battle with the insect pests in the only language that they could understand. Mayor Harold L. George and the City Council informed their fellow citizens of this state of warfare in a special bulletin dated July 14, 1954.

The strategy of this warfare was simple. Both the city government and its people had their roles to play. The city government itself struck at the adult fly population with an organized program of spraying all alleys by means of an effective, safe insecticide. Then it aimed an attack at the fly larvae by adopting an ordinance requiring that all grass cuttings and other refuse, except large brush, be placed in covered metal containers. The city also initiated more frequent collection of garden refuse in areas where schedules were not satisfactory; and encouraged the paving of unimproved alleys.

The general public, in turn, was asked to purchase covered metal refuse containers immediately, to be sure that all garbage, grass, and other refuse are placed in the proper containers with the lids kept on tightly. It also was asked to wash food particles from all cans and bottles put out for collection and to destroy fly-breeding places by removing unnecessary fertilizer, compost, and miscellaneous refuse.

The spray we use for our alley spraying program was selected after trying several different varieties. It is called Ortho Fly Killer-M, sold by the California Spray Chemical Corporation of Whittier, Calif. This is a fly bait and must have sugar or molasses used with it. We use the proportions of 100 gallons of water to one gallon of spray to 50 pounds of sugar. The cost of one application throughout the city is $290 for the spray, plus $80 for the sugar. Our spray crew will use approximately 1,600 gallons of the mixture to cover 42 miles of alleys. The spraying requires approximately two days. The equipment used is a 400-gallon Model L Hardie sprayer powered by a 4-cylinder Waukesha engine. It is carried on a 1½-ton International truck.

We initiate our program in May and spray three times prior to the end of June. Then we spray once a month for three more months, making a total of six sprayings during the summer season.

The city's ordinance requiring the use of covered metal containers has now been in effect approximately 18 months. As a result of continual reminding by two Public Works inspectors, we have come reasonably close to obtaining complete compliance on the part of the citizens. We also have purchased a completely new fleet of 16-yard Pak-Mor compactor, refuse collection vehicles, and these, together with the use of containers, has speeded our collection procedures.

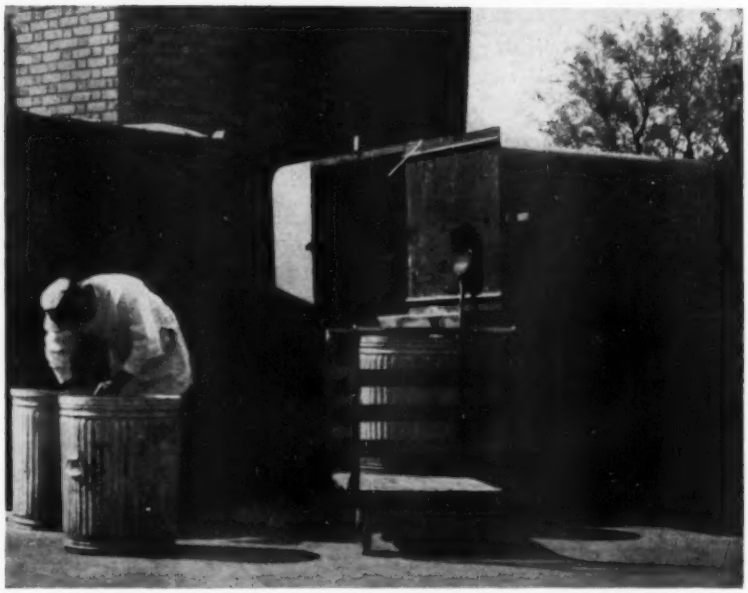
The paving of unimproved alleys is also progressing at a good clip. We now have the paving of two large districts under way, each includes two or three miles of alleys in addition to a number of individual blocks.

The benefits of this program are difficult to measure. But complaints about flies have virtually disappeared. From the standpoint of satisfied citizenry, we are tremendously pleased with the program, the improvement in sanitation, and the general all around city betterment.

Big Containers, Better Collection

Refuse sanitation takes an upswing in Augusta, Ga., with the help of large, portable containers

By W. R. BARNES
Supervisor of Public Works
Augusta, Ga.



These containers made dramatic changes for the better in refuse collection work.

THE present program of improved refuse collection and disposal had its start with the administration of our present Mayor, Hugh L. Hamilton, and Councilman Thomas E. Maloney, chairman of the Streets and Drains Committee. Prior to 1952, refuse sanitation had dragged its feet; we had antiquated equipment and deplorable disposal facilities. Today, we are well equipped, and the men work willingly, now that they have the right tools. The entire city is cleaner, thanks to the mayor's forthright program.

The big, portable containers produced the most dramatic change in our sanitation work. In the past, we suffered from difficulties with our refuse collection. We had to use residential-type equipment in commercial areas where large volumes of trash generated. Thus, there was the familiar sight of 30-gallon containers, lined up in sloppy rows, and filled to overflowing capacity.

We Start Our System

In 1953 we started our Dempster-Dumpster system with the purchase of one hoisting unit mounted on a Dodge truck. Local merchants and manufacturers then purchased 14 of the containers, locating them in convenient points where trucks could reach them easily and haul them to the disposal area.

This year, the number of these big containers acquired has increased to 42 and we have had to purchase a second hoisting unit to handle the load. The containers have eliminated unsightly conditions caused by scattered garbage and trash and have been popular with the merchants and manufacturers. Best of all, they have lowered our operating costs.

Sanitary Fill

The big containers, however, were only part of the mayor's program. Five years ago our Sanitary department was dumping garbage on an open, rat-infested dump covering approximately 40 acres of city-owned property. The dump was plagued with fires, and after any rain, it was almost impossible to drive a truck over the area.

In 1953 we purchased a TD-18 International tractor equipped with a Drott Bullclam. By using this tractor and our HD-10 Allis Chalmers, bought in 1942, and also aided by technical advice from the State Board of Health, we started our sanitary fill on a sound, constructive basis. To date we have completely covered our old dump with surplus earth, leaving very little evidence that it ever existed.

Our fill area, a river swamp covered with trees and undergrowth, is part of the same tract that contained the open dump. We use the HD-10 to clear the undergrowth, and then assign the TD-18 to bring in sand and river silt from the low swamp to the top of the fill. The TD-18 produces a cut from 5 to 8 feet deep. Trucks then place the garbage in the excavated area, and the tractors bulldoze the cover material over it.

With the landfill we have eliminated rats and fires. We already have reclaimed 10 acres and will rehabilitate the entire 40 acres within the next 10 years.

Collection Fleet

For general collection work we retired our obsolete equipment back in 1952. Starting that year we purchased four A-30 Mack trucks equipped with 12-yard Leach Packmaster bodies. Later we purchased two Federal trucks and mounted Gar Wood Loadpacker bodies of the same capacity on them. In 1958 we added four more Mack trucks with 12-yard Leach Packmaster

Long lines of overflowing residential-type containers are being ruled out of the city's sanitation program.

bodies. In the next year we purchased two International trucks with a 9½-ton gross vehicle weight and placed two 16-yard Packa-Van bodies on them. In 1955 we duplicated the order.

Our Sanitary Department operates on a 40-hour per week basis. We have 14 regularly established collection routes, plus one alley truck in the business district for day collection. Our crews pick up the bulk of the garbage and trash from the business district at night. For this work we have three trucks, each supplied with a driver and two loaders. We collect rough trash, such as leaves, limbs, and other miscellaneous waste on Tuesday, Wednesday, and Thursday, fifty-two weeks a year.

In the residential area, we have 26,000 dwelling units. Of these, 60% receive service five times each week. The remaining are served three times a week. Each established route serves an average of 1,410 units.

Administrative Personnel

The administrative personnel in the department consists of a superintendent, a foreman, two sanitary inspectors, an office clerk, and a utility man. On the operating level we have two tractor operators, 20 day truck drivers, 2 Dempster-Dumpster operators, 35 day garbage collectors, 3 night truck drivers, 6 night garbage collectors, and 9 drivers that work Saturday nights.

Last year, with the help of our City Attorney, E. D. Fulcher, and the Judge of Recorders Court, C. W. Killebrew, we drew up an entirely new sanitary ordinance. In part, it requires that the owner or occupant of any premises producing more than five 30-gallon containers of refuse between regular collections provide a closed container of the Dempster-Dumpster type ranging in capacity from 6 to 12 cubic yards, or move the excess garbage or trash at his own expense. We will be glad to supply a copy of this ordinance to any city official who expresses interest.

Lessons Learned from Recent California Floods

HOW should a city plan against a possible catastrophe? In the March issue of *Public Management*, the monthly magazine of the International City Managers' Association, R. N. Klein, city manager of Santa Cruz, Calif., writes down the lessons taught him by bitter experience. Santa Cruz lost eight citizens and some $8 million worth of property in recent winter floods. A summary of the items listed in this article, "A Lesson in Disaster Planning," follows:

1. Road blocks by state highway patrol should cover all entrances to a damaged city to keep out the curious whose crowds would stall disaster work. Regular or military police should be assigned to guard the business district from possible looters.

2. Fire and police departments and hospitals should have emergency power installations that are well protected. They should keep a good supply of such simple items as candles and flashlight batteries on hand.

3. Blankets, cots, and first-aid supplies should be stocked in every school building for use in rescue and evacuation work.

4. A missing persons bureau and information center should be established, perhaps by the local chamber of commerce.

5. The city treasurer's office should be set up to receive and keep custody of cash boxes, securities, and other valuables from damaged businesses and homes.

6. Agreements should be made ahead of time with advertisers, newspapers, and TV and radio stations to warn citizens about business "scavengers." These are people who come in and buy damaged businesses with good reputations and then bring in carloads of merchandise which they sell as disaster goods, implying that they are offering special bargains.

7. A business district warning system other than a siren or public warning device is a must. A public warning system may bring out excitement seekers who will hamper traffic. In Santa Cruz, a telephone fan-out system is being set up for members of the junior chamber of commerce and their wives to call on a pre-arranged schedule when they receive the signal words "project warning."

8. Rescue service should be set up as an organization separate from any other and have a chief and crews that have been trained and given assignments. Crews should have walkie-talkie communication units.

9. The city should have pre-arranged feeding locations for evacuation, rescue, and cleanup crews in addition to any Red Cross food stations.

10. Loudspeaker trucks should be used to inform the public in case telephones and radios fail. A supply of battery radios in civil defense headquarters may be useful.

Glimpse of the Burroughs accounting machines which help to make budget, stores, and payroll records.

Pointers from Accounting Control At Chicago Park District

By HAROLD L. BAKER
Comptroller
Chicago Park District
Chicago, Ill.

BY adapting mechanized accounting equipment and developing rapid and accurate methods, complete accounting information is maintained on the multimillion-dollar activities and facilities of the Chicago Park District.

Maintaining accounting control of the Park District is the responsibility of the Comptroller's Division. The 1955 Park District budget of approximately $46,500,000 is derived from a general park tax on all city property, from fees collected from licenses, and from other miscellaneous revenue. Budgetary records are prepared on three Burroughs typewriter accounting machines.

As encumbrance and expenditure media are received in the Budget Section, they are posted to budget ledgers set up by account and department. Total expenditures, outstanding encumbrances and the new unencumbered balance are provided by the machine. As a by-product to posting budget ledgers, a daily statement of budgetary transactions is prepared for each of the 23 departments, divisions, or sections in the Park District. The accounting day closes at 4 p.m. By 4:30 p.m. each department head has received his daily statement.

At the end of the month, a monthly report is submitted to each department head. It is obtained by copying current balances from the ledger. Thus, each department head knows what his department has expended and encumbered by detail and by total—an indispensable administrative guidance tool.

For budgetary accounting purposes, contracts are divided into engineering performance contracts and material requirement contracts. Immediately after the Board of Commissioners approves a contract, a contract ledger is set up with the first posting being the contract entry, the contract price and uncompleted balance. Payments on contracts are made periodically from engineers approved estimates of work done to date, or in the case of material requirement contracts from duly approved purchase orders.

Stores

Four geographically situated store houses are maintained under the direction of the Treasurer and the Assistant Director of Finance and Property. Inventory in the four houses totals $450,000. Separate sets of stores ledgers for each house are kept in the Comptroller's Division. Different colored ledgers and headings easily identify the records of each house, which is permanently assigned to one of four operators of a

Burroughs Stores accounting machine.

Ledgers are filled by bin numbers. As requisitions are received by the operator of a stores machine, ledgers are posted to show the quantity issued. The new balance on hand and value of the balance are computed and printed automatically. Values of quantities issued to each requisition and the total value are also posted to the requisition.

Posting

When a copy of a purchase order is received by a machine operator, the quantity and price are posted to the appropriate ledger. The new quantity on hand, dollar value of the quantity, and the new average unit price are computed automatically. These methods provide accounting control over quantity of material received, used, balance on hand and available for issue. Material is priced accurately as it is added to inventory, retained on hand or used. The system also supplies information for purchasing and indicates the value of the inventory according to classes of material.

About 900 checks are disbursed monthly, with each check representing anywhere from one to 20 invoices. All vouchering and disbursing is capably handled on two Burroughs typewriter accounting machines.

Payroll

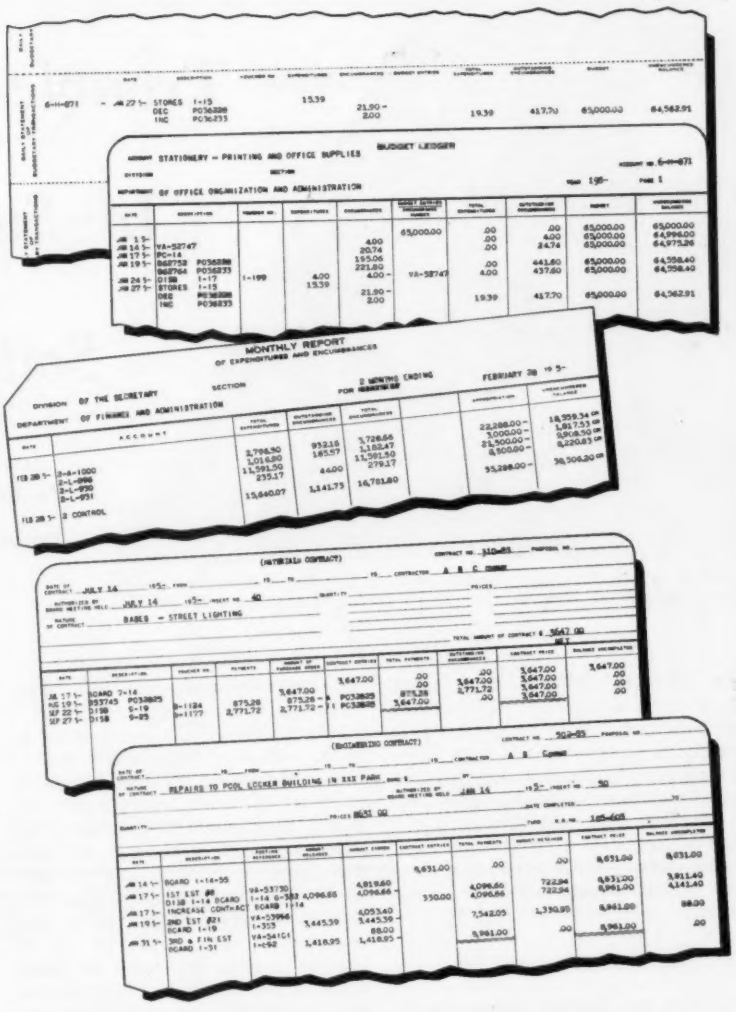
All pay checks are mailed to employees' homes. All records are completed and checks are in the mail for receipt by the employees for the first half of each month by the 5th of the month following.

Employee statements, earnings record, payroll journal and the checks are posted in one operation. The checks are written in another. Copies of the journal are submitted to the Civil Service Board, to the Comptroller, to the Treasurer, to the Pension Board and to all of the employee sections as well.

Because the three Burroughs payroll machines used for preparing the records print totals of taxes withheld and taxable earnings to date, preparation of W-2's has become a copying job of typing and addressing.

For facilities rented from the Park District or for services rendered, an accounts receivable system has been developed to handle between 3,500 and 4,000 bills annually with a total value of well over a million dollars.

Bills and ledgers are posted in separate operations. Two copies of each bill are submitted to the debtor; one is submitted to the Treasurer's Division, which also serves as Park District Collector, and two copies are retained in the Comptroller's Division. The monthly billing total becomes the general ledger entry.

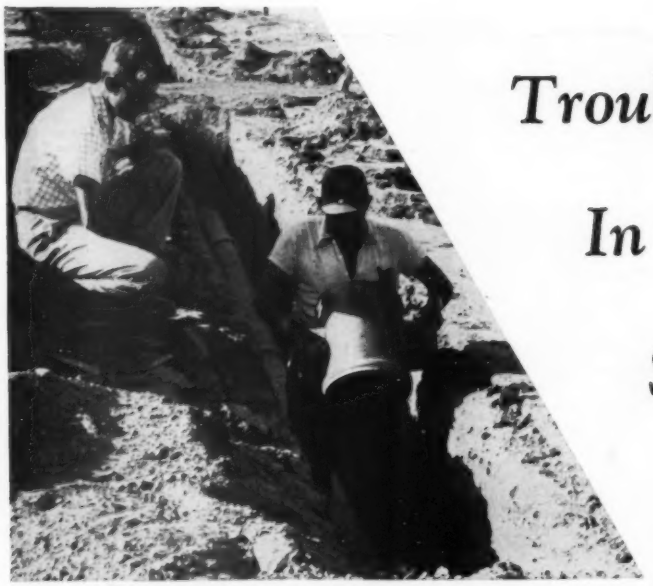


The upper forms are the Budget Ledger and the Monthly Budget Report. The lower pair of forms are the Materials and the Engineering Contract ledgers. The uncompleted balance (last column) is furnished automatically by the machine during a posting operation. A double, wavy rule below total payment and contract price columns indicates termination of the contract.

Expense Control

On expense control, each division submits reports of expenses which are posted by account in the Expense section. Ledgers are filed by general ledger number. A classification of Accounts and Budget Code identifies expenses and has proven to eliminate considerable transcription. Ledger posting is a rapid operation in which daily and year-to-date balances are printed automatically. The provided totals at the end of a posting run are checked to agree with the totals on the report that is submitted by the division.

Principal duties of one machine operator are to post the general ledger daily. A complete set of asset, liability, revenue, and expenditure accounts establishes final control and provides an over-all picture of the Park District activities. Mechanized accounting with its resultant advantages of speed, economy, simplicity and accuracy also have been extended to the Park District Credit Union and Pension Fund Sections.



Trouble-Free Service In Super-Corrosive Soil

Imperial, Calif., solves its water main maintenance problems

Light in weight, the copper fittings are easily handled without the need for heavy equipment. Here an AllCopper cross fitting is about to be installed.

IN many parts of the country, years of trouble-free service may be commonplace, but to Imperial, Calif., it's big news. Perhaps no other city has a corrosion problem equal to that found in Imperial, where replacing of cast-iron pipe and fittings was a serious and perplexing problem. Now a new water system has been built—one which should last for many years.

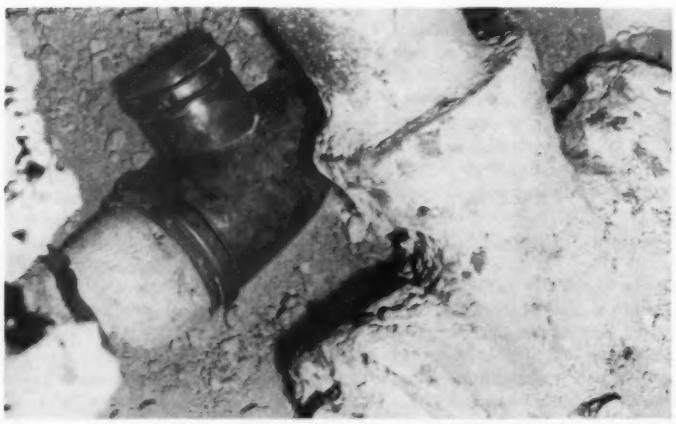
Corrosion-Resistant Pipe

Golden and Bryant, engineers for the new water system, selected asbestos-cement pipe because of its excellent resistance to corrosive action. Already used in the area, this pipe had proved effective, but the selection of fittings still remained a problem. Cast-iron fittings could be used, but past experience showed that periodic replacement would be required. Then it was learned that Baker AllCopper fittings were available. Although a request for bids had been issued, the city requested an alternate bid using Baker AllCopper fittings in place of caulked cast-iron fittings. Five of the 11 bidders quoted the same or lower price on the alternate. The low bidder quoted an identical price for the base bid on the alternate. Upon finding the costs identical, the city selected the alternate bid calling for 300 Baker AllCopper fittings pipe using Johns-Manville Ring-Tite seals.

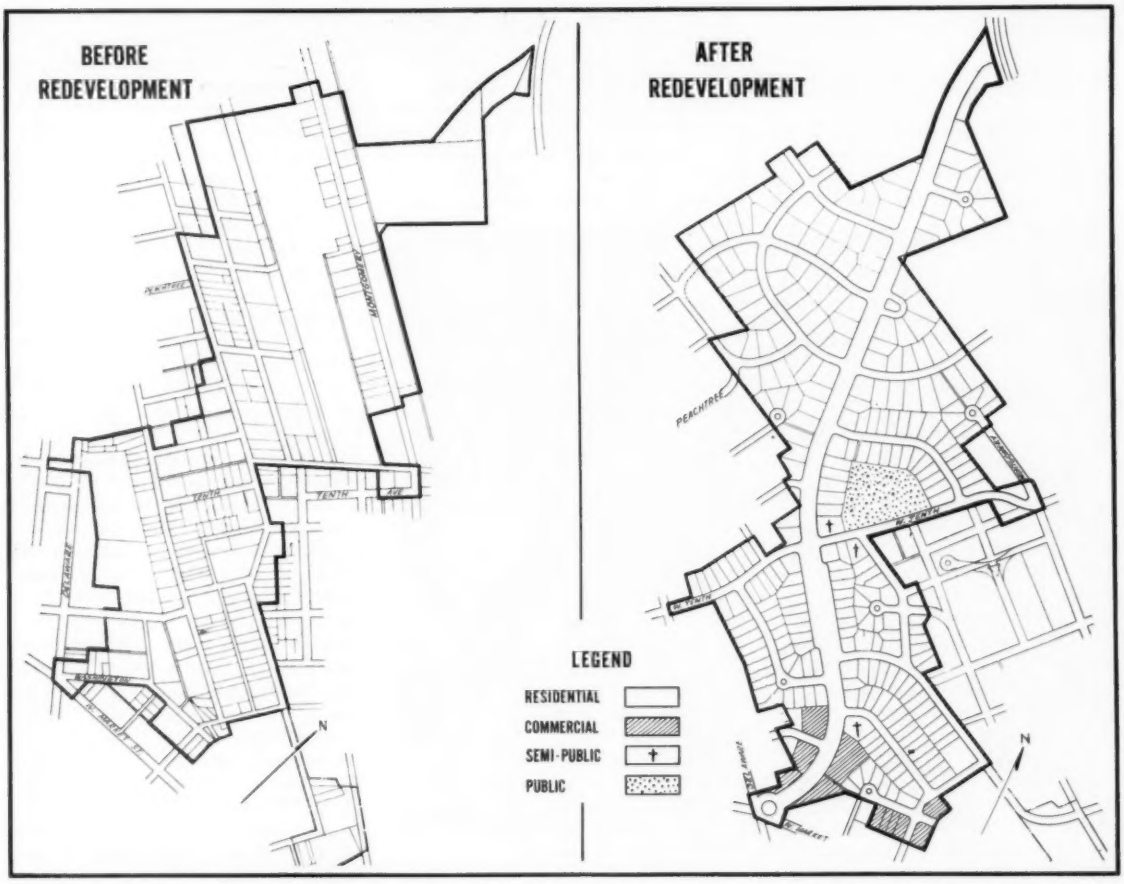
Actual construction brought out several adventages of the copper fittings other than their resistance to corrosion. The light weight and Ring-Tite seal increased handling efficiency and made pipe laying simple and fast. Johns-Manville Transite pipe was used throughout.

The soil at Imperial is a very heavy adobe, subject to extreme volume changes and in addition, Imperial is subject to periodic heavy earthquakes. These conditions make the flexibility of the joint at the valve very important.

Now, no additional cost of construction is required for future maintenance.



(Left) Copper tee in place ready for backfilling. (Right) Tight conditions present little difficulty for the Ring-Tite seal.



Before and after plans show how a badly platted residential slum in Johnson City will be cleared and redeveloped. The redevelopment agency considers small lots in the lower half of the plan as good locations for houses authorized to be built with new Section 221 FHA mortgage insurance.

Section 221 Goes to Work

Here is a progress report on the first use of a new home-financing technique designed to aid in the relocation of families displaced from redevelopment projects. How is it working? What are the emerging problems? Here are some answers

By A. E. CORNETT
Redevelopment Director
Johnson City, Tenn.

IN redeveloping a 121-acre residential slum, Johnson City, Tenn., is using "Section 221" FHA mortgage insurance to assist in the relocation of displaced families. The success of the Johnson City experiment may well determine the future course of this type of home financing aid designed, as it is, to help displaced low-income families obtain privately developed dwellings at prices they can afford.

Long recognized as one of the worst slums in this city of 28,000, the Fall Street redevelopment project contains 215 buildings, housing 119 white and 63 Negro families. Just under 80% of the structures are dilapidated, and, as everyone in Johnson City agrees, the only hope for creating a stable neighborhood in this area lies in a complete demolition of the existing buildings and the replatting of the poorly laid out existing street and utility pattern. The proposed redevelopment plan together with the existing street layout in the area are shown below.

First Use of Section 221

While the project provides an interesting example of the type of redevelopment taking place in smaller communities, the unique element in Johnson City's planning is the proposed use of the Section 221 mortgage insurance. In fact, Johnson City's experiment with this special financing aid is, in company with

Wilmington, Del., the first in the nation.

Difficulties of Relocation

As everyone connected with slum clearance knows, relocating families displaced from demolished homes is one of the most difficult problems in redevelopment work. (For an account describing how local redevelopment officials rate their worst problems, see the article "Surveying the Barriers to Redevelopment Progress" on pages 154-55 in the March 1956 issue of THE AMERICAN CITY.) With a total of 182 families to be rehoused in new locations, we found through detailed surveys of income characteristics that although 157, or 86% of the total, are eligible to be admitted to public housing units, the present Johnson City projects could not accommodate the demand. Even when we assumed that approximately 10% of our existing units could be made available each year for three years through normal family movings, we found it was impossible to count on our existing public units to handle the relocation problem.

Public Housing Couldn't Do Relocation Job

After applying for an authorization for an additional 200 low-rent units, we found further that our public housing needs were greater than originally estimated. Consequently, it was decided that Section 221 could provide effective assistance.

Authorized first in the Housing Act of 1954, the new mortgage insurance may be obtained for the construction of new—or the improvement of existing—single-family or multifamily houses for relocation purposes either within or outside a redevelopment or renewal area. Authorization for the Section 221 mortgage insurance for a specified number of units can be granted to municipalities with a slum clearance project under way. Such authorizations are granted by the Administrator of the federal Housing and Home Finance Agency. In Johnson City, a total of 20 units are authorized to receive the "221" mortgage insurance. Ten of these are designated for Negro families.

The top limit that can be set on the "221" mortgages is $7,600, although the FHA Commissioner may increase this amount to $8,600 in high-cost areas. Geared for low-income groups, Section 221 allows down payments for the purchase of such housing to be as low as 5% with dates of maturities running up to 30 years.

According to the Housing and Home Finance Agency, the new mortgage insurance has several advantages over standard FHA mortgage insurance. First, it is not subject to credit restraints imposed on other FHA insured mortgages, and second, the Federal National Mortgage Association is authorized to make advance commitments to purchase such mortgages.

Putting "221" Into Action In Johnson City

Here is how we are putting the "221" aid into effect in this city. First in our relocation interviewing, our technicians are publicizing the availability of the new insurance to the families scheduled for removal. Our studies have shown that a majority of the families in the Fall Street project area have a deep feeling for home ownership. Although the annual incomes of the families will be the principal determinant of their choice for entirely new houses or a rehabilitation of an existing unit, we anticipate that the requests for "221" mortgage insurance will be predominantly for single-family two- or three-bedroom units so long as they can be constructed for amounts that do not exceed the maximum for loans.

Possible Locations for "221" Housing

We believe that it may be possible for housing financed under the "221" program to be built in the lower section of the Fall Street project area where the lots are somewhat smaller than those in the upper area. Such smaller lots are believed to be well suited for the type of building that is likely to take place under the "221" program. Furthermore, the lots will meet the present requirements of the local zoning ordinance, and the housing will, in all eventualities, be compatible to that in surrounding areas.

If individuals do not desire to locate in this area, there are several other sections within the city where lots can be made available for new Section 221 units. In addition, many old houses in the city can be rehabilitated with the program's aids in accordance with Johnson City's new modern standards of healthful housing.

Because the Fall Street project is still in the early stages of land acquisition and family relocation, there has been no demand or applications for homes under this FHA plan. However, in the four months since the Section 221 aids were authorized for Johnson City, several builders have investigated the details of the program, but up to now they have not formulated any plans for building under the program.

Some contractors have questioned the advisability of allocating 10 of the proposed 20 Section 221 units for Negro families. Our studies of the incomes of the Negro families to be displaced indicated that few if any will be able to afford new homes in the $7,000 to $8,000 range. Because of these conditions, it is our opinion that builders will not attempt to fulfill the allocation for Negroes in Johnson City.

In investigations of the financing possibilities for either new dwellings or the rehabilitation of old houses under the Section 221 provisions, we find that at present no local lending agencies are ready to make loans under the program. However, leading groups in communities within a 100-mile radius have indicated that they are not only qualified but willing to finance homes under this type of mortgage insurance. Thus, it is evident that although the financing arrangements for Johnson City's experiment are not ideal, they can be achieved without undue delay or inconvenience to those wishing to use the advantages of the Section 221 aids.

The Johnson City experiment in using Section 221 mortgage insurance will be watched throughout the country. As a supplementary aid in relocating families from slum clearance areas, it can be a useful tool. However, as this preliminary progress report shows, stumbling blocks may well occur in the ability and willingness of builders to provide houses at proper standards in the $7,000 to $8,000 range and in the willingness of lenders to provide loans for such dwellings.

Municipal Engineer Honored in Miami, Fla.

FOR THE FIRST TIME in its history the Miami chapter, Florida Engineering Society, named a municipal engineer for its award of Engineer of the Year. Arthur Darlow, director of the city's Engineering Department, received the award this year, in recognition of his proposals for radical changes in traffic movement to relieve vehicular congestion, for his plan for the enlargement and rehabilitation of the Port of Miami, and the enlargement of the city's Orange Bowl Stadium.

No Base Failures—Better Stability

Soil-cement streets please the public and ease the budget in Rochester, Minn.

By C. A. ARMSTRONG
City Engineer
Rochester, Minn.

Six years of steady service with no sign of base failure.

SIX years ago, we decided to see whether soil cement could cut our street construction and maintenance costs. Many of our gravel surfaced streets were in bad shape, annoyingly dusty and costly to maintain. We thought that soil cement would provide the inexpensive yet low-maintenance pavement that all cities hope to attain. Although it is too early to reach any final conclusions, results so far indicate that we have found a promising answer.

Six Projects

We completed a total of six soil-cement projects in the years 1950-51-52. Each project dealt with streets that had concrete curb-and-gutters. However, these roadways had grown from dirt to gravel to road-mixed oil surfaces, and were poor by any standard. The weak base kept maintenance crews busy, and their irregular surface, 3 to 6 inches above the gutter line, annoyed the motorists.

Soil-cement appeared to offer two advantages over crushed rock on the streets in question. First, a great deal of excavation would be necessary before rock could be placed. With soil-cement, only enough material had to be removed to bring the street back to proper grade. Second, soil-cement provides more stability than rock, and we expected it to require less maintenance.

Construction

We bladed aside the top 6 inches of old pavement and then brought the roadway to grade by removing excess dirt from the subgrade. The 6-inch layer of salvaged material usually consisted of 3 inches of oiled gravel and 3 inches of the original dirt. A Seaman Pulvi-Mixer processed this material, working it down to a fine, uniform size for this type of construction. A grader then spread it to uniform cross-section to be sure there was sufficient material to form the proper grade.

We added cement to the pulverized material by spacing the bags at proper intervals, breaking them open, and then spreading the cement evenly over the soil. Next, the Pulvi-Mixer mixed the cement with the soil to a 6-inch depth. We then used our street-sprinkling truck to apply water to the soil-cement mixture until it contained suitable moisture for good compaction. After thorough mixing, the soil-cement was compacted with a sheep's-foot roller and finished with a motor grader and steel-wheel roller.

On the last street, we used a Wood traveling mixer and got good results. This machine adds the water and mixes the soil-cement in one pass.

The day after construction, the surface was sealed with MC-3 cutback asphalt, applied at the rate of 0.25 of a gallon per square yard. This was then blotted with sand and the street was closed to traffic for 24 hours.

Work Schedule

A typical work day started at 6 a.m. with the hauling of cement and placing it at proper intervals along the curb. A second crew started the day by pulverizing the old street material. The street was usually scarified and bladed to grade the previous

Rochester's Soil-Cement Projects—Their Size, Characteristics, Costs

List of Projects

Year	Street	Length	Width	Soil	% Cement
1950	7th Ave.	800 ft.	36 ft.	Sandy loam	10
1951	10th Ave.	600	32	Sand and loam, little rock	8
1951	7th Ave.	450	24	Black sandy loam and gravel	12
1951	5th Ave.	532	32	Silt loam, very little gravel	15
1951	1st St.	532	34	Silt loam, considerable gravel	8
1952	9½ St.	420	34	Sandy loam, some bitumen and crushed rock	12

Costs

Cement content	Cement cost	Placing cost	Total
8%	$0.36	$0.14	$0.50
10	.45	.16	.61
15	.67	.20	.87

day. These two operations occupied the entire morning. The afternoon was spent in spreading the cement, mixing it with the soil and sufficient quantities of water, and finishing the surface in preparation for sealing. Equipment used for this work included a Seaman Pulvi-Mixer, two motor graders, a sheep's-foot roller, steel-wheel roller, and a sprinkling truck. A ½-yard shovel was used to load excess street material and four trucks hauled the material from the site. The trucks were also used to haul the cement used.

All of the soil-cement streets were surfaced with a 2-inch mat of plant-mix asphalt. All streets, with the exception of one, received the surface mat within three weeks of construction. In the one case, the street was used a full year before the surface mat was applied. Although used without a surface mat for a year, the street showed no damage. However, the light surface seal had raveled slightly.

Construction costs of the soil-cement streets ranged from $.50 per square yard for streets requiring 8% cement to $.87 per square yard for streets containing 15% cement. The additional amount of cement used accounted for the price increase. The aforementioned figures do not include the cost of excavating required to bring the streets to proper grade. Excavating was done by city employees using equipment having medium to low rental rates.

In our opinion, experienced crews and the use of bulk cement would reduce costs still further. However, our figures still compare favorably with the $.60 per square yard for crushed rock base, exclusive of excavation.

Results

In the two to four years that the streets have been in service, none has shown evidence of base failure. Traffic on the streets averages from 1,000 to 2,500 vehicles per day.

In March 1954, we took test cores from each job. Tests run on several of the cores showed comprehensive strengths of 950 to 995 pounds per square inch.

One of the big advantages of soil-cement is that a job can be completed in one day with a minimum of disturbance to residents along the street. The drawn out process of excavating existing material and replacing it with a crushed rock base that creates a dust problem is avoided.

Lack of finances has not permitted us to do any appreciable amount of improvement for old streets during the past several years. However, a realignment of our assessment policies should change the financial picture and, if so, we expect to make considerable use of soil-cement stabilization in our future work.

Midland, Texas, Publishes Monthly News Report

MONTHLY municipal news reports directed to the Council and citizens of Midland, Texas, are now being issued by City Manager J. M. Orman. These reports, the first of which appeared in February 1956, are compiled from information submitted each month by various municipal departments. Since it is not feasible to cover each department each month, only the highlights of municipal operations are developed.

Reported in the six-page, mimeographed February issue are a new street-paving contract, trends in new subdivision and building permits, data on the city water supply system, service center reports, the city's fire record, expansion of the airport, in-service training, public works highlights, appointment of a new city attorney, and the purchase of two brand new labor-saving machines.

Labor-Saving Machines

One of the new machines will enable the Traffic Engineering Division to make its own traffic signs and is expected to result in substantial savings. The other machine is reducing the city's postage bill. Formerly each department purchased rolls of postage stamps as needed, at a cost of about $144 per month. With the new postage machine, costs have been reduced to $100 per month, plus a monthly rental. On the basis of present savings, the cost of the machine will be amortized in about two years.

Among other cities producing such monthly reports are Kansas City, Mo., and Phoenix, Ariz., which mimeograph their newsletters on single 8½-inch by 11-inch sheets. A number of small towns on suburban Long Island near New York City publish brief newsletters for their residents. These include Mineola (1950 pop. 14,831), Westbury (pop. 7,112), and Rockville Centre (pop. 22,362). These latter are prepared by a public relations firm which specializes in this type of work for municipalities.

A Sergeant (right) and a Harley-Davidson motorcycle traffic officer of Columbia, S. C., uniformed in Dacron and wool (half-and-half) for longer resistance and easy care.

Buy Better Uniforms Faster With Specifications

IF you're purchasing uniforms with inadequate specifications or none, you know what a frustrating job uniform buying can be. The uniforms bought may vary in shade, fabric, and even in style, and some of them actually wear out faster than others. You're just not getting the most important thing you're paying for: a uniform appearance among your employees!

Complete up-to-date specifications assure you the truly uniform appearance you are seeking and save you time and money. Consider three factors.

Fabric—How do you choose the cloth? Do you want whipcord or serge; elastique or doeskin, tropical or gabardine? It's important for your

Firemen like uniforms of Dacron and wool because no pressing is needed and spots can be removed easily at home.

employees' comfort and appearance.

Style—How should your uniforms look? Do you want a jacket with brass buttons? A plain coat with one pocket? The right answer will give your employees the neat appearance.

Construction—Remember, the materials used in the manufacture of a uniform often determine its life. Which thread will give the best service? What kind of linings are best for pockets, collars, and lapels?

It is impossible to write specifications for any product without knowing all about the product. The first step, therefore, is to call in a representative of a company making uniform fabrics. Ask about the various types of fabrics that are best suited for uniforms. You'll want to know, for example, how the fabric will stand up in rainy weather; or around acids; or in hot weather. Ask for fabric swatches to determine the weight and color of the cloth that is available. Of importance, too, are prices and delivery dates.

Make the fabric you want a requirement in your specifications. State the mill name, style, and color number of the fabric you want your uniform supplier to use. In addition, include such information as fiber blend, type of fabric weave (tropical, or serge, or gabardine), fabric weight (8½ ounces/60-inch yard or 12 ounces/60-inch yard), tensile strength.

Specifying the fabric in this way puts the responsibility on the fabric supplier to give you the quality you want. This helps to give you further assurance of uniformity of shade, quality, construction, and style. Furthermore, the fabric supplier can plan his work so that he can have the fabric available and ready for delivery when you want it. An important advantage, too, is that with the fabric carefully defined in your specifications, you needn't worry if you have to change your uniform supplier, or if you need the services of an additional manufacturer.

If your city's policy is against designating a fabric manufacturer's name in specifications, give as much detail as possible to make sure that you get the fabric you need to meet your requirements.

To be sure you get the exact fabric you want, ask the fabric supplier to stamp his KAUMAGRAPH or seal at frequent intervals on the reverse side of the fabric. Then you'll know when your uniforms are delivered that this is the fabric requested.

Style and Construction

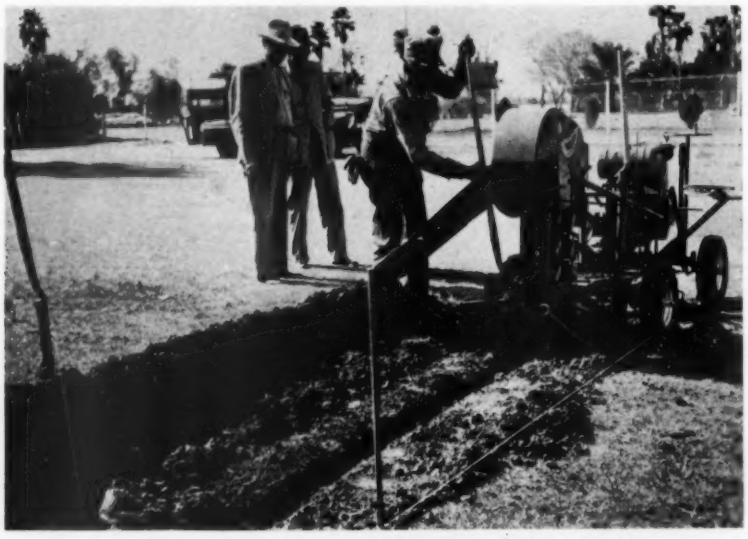
Now you'll want to call in your uniform supplier. He knows how various kinds of fabrics will tailor. He can also show you complete uniforms that will illustrate the appearance, drape, and touch of the finished garment. Let him advise you on such things as (a) number and type of pockets required, (b) loops to accommodate the type of belt to be worn, (c) decorations required, (d) material for linings, (e) type of thread to be used, (f) coat facings, (g) buttons, (h) pleats on trouser, (i) lapels. If you want hats to go with your uniforms, don't forget to include the same kind of information. When writing specifications, the more detail you give the less chance of misinterpretation by the manufacturer.

Ask the uniform manufacturer to furnish you with a completely finished sample uniform of the kind you want. You may wish to have the uniform tested or may want to check it yourself to see how closely it conforms with what you have specified. Once you have approved the sample uniform, it will serve as a pattern with which to compare the uniforms that will be delivered according to the contract. Keep in close touch with your uniform supplier to make sure that work is progressing according to his and your satisfaction.

When discussing your fabric needs, you might want to ask him to show you some samples of blends of Dacron polyester fiber and wool. These garments are cool and durable, and feature crease and shape retention, wrinkle resistance, and ease of care.

A *Park Department Trencher*

A CITY that has to operate the nation's biggest city park has to schedule its labor forces carefully. The 14,817 acres that constitute the big South Mountain Park maintained by Phoenix, Ariz., is a record-breaker in the city park field, and is only one of the municipal parks that Superintendent L. Cedric Austin has under his jurisdiction.



A little trencher opens a line in Encanto Park, Phoenix, Ariz.

To place the many water and sewer lines and electric conduits in these city parks, Superintendent Austin now uses a small Ditch-Witch trencher. Its light weight, approximately 800 pounds, permits it to be moved easily from place to place, and makes it less subject to tearing up the surface of the ground. Crews have commented on its rugged construction and its positive, manual feed, advantageous when used in varying types of soil.

The Phoenix unit can dig a trench 6 inches wide. If a wider cut is needed, the crew simply makes a second pass. The crews use it to cut trenches to a maximum depth of 30 inches, and find that it will trench from 1½ to 4½ feet per minute.

The park crews report that the machine works best in firm soil. However, if it must operate in sandy soil, it needs only dual-drive wheels.

Berkeley, Calif.

Develops A "New Look" Playground

Park Department uses new technique for building professionally designed play sculptures

This "Play Turtle," which is built of cast stone from molds rented from a design firm, is an example of the imaginative equipment to be found in the Berkeley, Calif., playground.

FROM Philadelphia in the East, Baton Rouge in the South, and Oakland in the West, playgrounds with new and modern designs are making news. The freshly designed model playgrounds have aroused great interest because of the lively and imaginative equipment that give them a "new look." This equipment, which has caught both the public fancy and the cautious inquiring eye of the professional park official, has proved a hit with youngsters as evidenced by high attendance figures associated with the new playgrounds.

Departing from the stereotyped patterns of standard playground equipment, the new pieces seek to stir the keen imaginations of smaller children for whom they are designed. Animal and fish shapes provide surfaces for such traditional activities as sliding at the same time that they provide props for the dramatic play that appeals to young children.

"Play Porpoise" features traditional sliding surfaces at the same time that it provides a prop for vivid dramatic play.

The latest city to embark on a "new look" playground is Berkeley, Calif., where a new twist in the purchase and construction of the imaginative play equipment is being tested. Here the Park Department, under the direction of Superintendent Harold D. Givens, is making professionally designed playground sculptures in its own shops from original designs supplied by a pioneer firm in the play sculpture field—Playground Associates of New York. The sculptures being produced in Berkeley are a "Saddle Slide," one of which has already been completed, a "Play Porpoise," and a "Play Turtle," both of which are presently under construction. Each piece is of cast stone and weighs from 900 pounds to one ton. All are immovable and indestructible, and will require no maintenance.

The most interesting features of the Berkeley project are the fabrication and casting methods. Although from a manufacturing point of view, concrete and cast stone materials have always been cheaper for playground equipment than traditional steel pipe, the completed stone pieces have presented transportation difficulties because of their great weight. In Berkeley, these difficulties are being avoided by producing the castings locally from light-weight molds rented from the design firm. Complete construction blueprints are supplied for the casting which requires no specialized shop skill. The process is also reported to require only simple municipal equipment and standard inexpensive materials available in any large city.

Although such a "do-it-yourself" system of producing playground sculpture has been tried previously, Berkeley is the first city to build equipment from professionally designed molds. Credit goes largely to Chas. W. Davis, director of recreation and parks. The pieces are being built at the City Corporation Yard under the supervision of Henry McGraw of the street department. The first sculpture is to be installed at one of Berkeley's children's playgrounds before May 1.

This modern radio-control desk, located in the new service building, includes one of the microwave system terminals.

We Microwave Our Water Data

New all-weather media uses radio beams to transmit data from one point to another

By J. PAUL PRICE
Superintendent, Water Dept.
Warren, Ohio

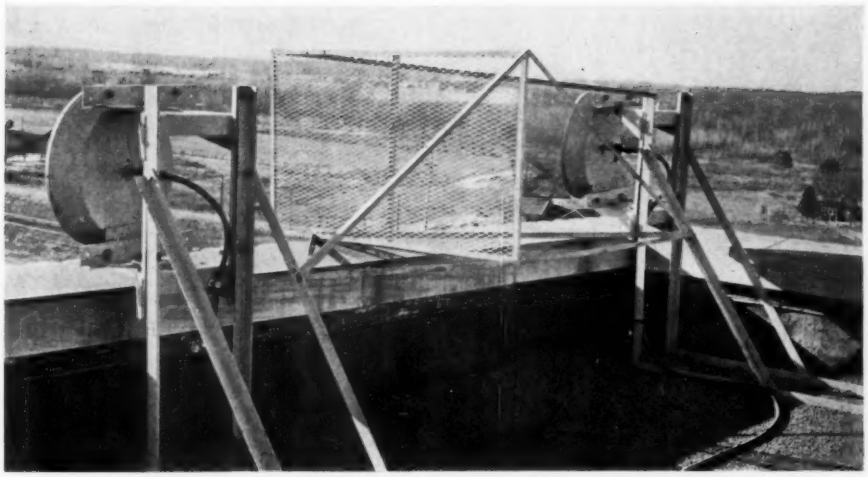
Pressure data transmitted to the water plant by microwave provides a continuous record of constantly changing water levels.

TRANSMITTING various data from outlying areas in a water distribution system to a central control point is not new to the waterworks industry. However its transmission by radio beams not troubled by weather disturbances or line breaks is new, and marks a forward step in good water supply.

Warren, Ohio, like most cities equipped with a telemetering system, used telephone lines to send water-level data to its Mahoning River pumping plant. However, construction of a new water plant near Mosquito Lake, 8 miles outside Warren's city limits, brought about a restudy of the telemetering system. The new plant was located in another telephone district and the high rates made microwave less expensive. Microwave's proven reliability and performance also made it an attractive medium for the modern plant. Consequently, the microwave system of telemetering was adopted.

Dependable Media

Microwave is one of the newest of the electronic marvels. This system uses radio beams in place of wire lines to carry communications from one point to another. The microwave beams provide an all-weather media, unaffected by snow or ice, high winds, or falling trees. They are ideal for sending teletype, telegraph, and facsimile signals; provide two-way telephone channels:



Microwave antennas are mounted on the roof of the chemical building, part of Warren's water plant.

and are a dependable and accurate media for relaying data in telemetering systems.

The new water works replaces the city's old Mahoning River plant that had been straining to provide the water that sustains Warren's continuously growing industries. Permission to tap into the U. S. Government reservoir at the Mosquito Lake flood-control project gave impetus to the move that culminated in the construction of the new system. The program also included a new service building, located in the city, to house the department's maintenance shops and the new radio control room. A 1,000,000-gallon Pittsburgh-Des Moines storage tank was also erected adjacent to the service building.

Standard Equipment

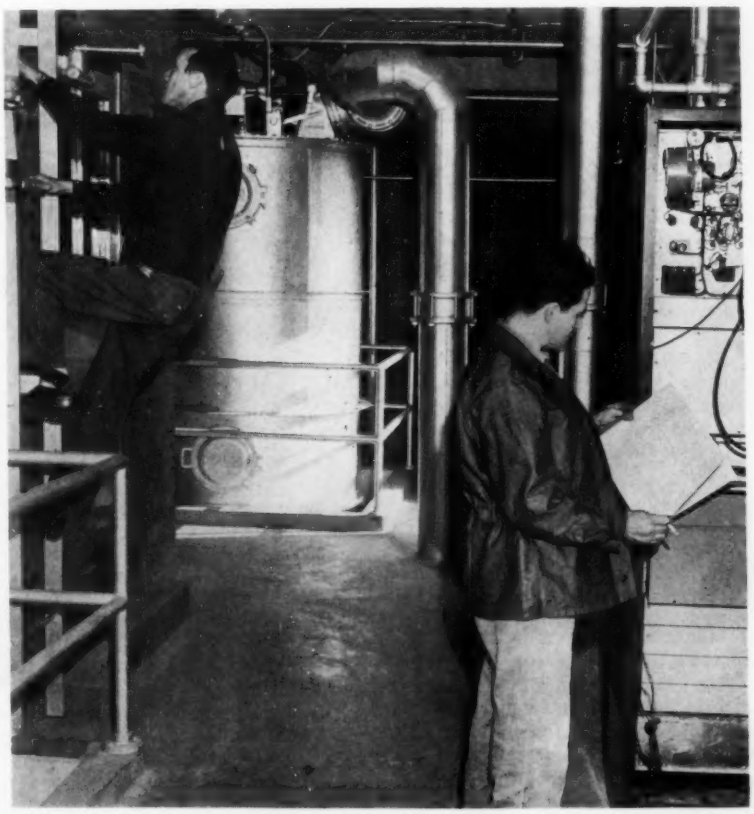
Warren's microwave link, a small but efficient unit, includes two RCA 960 mc (megacycle) terminal stations. The system provides a two-way voice telephone channel and three one-way telemetering channels. The telemetering channels carry water-level data from the city to the pumping station near Mosquito Lake.

The service-building station includes an MM-9 transmitter, an MM-9 receiver, an exciter, a power supply, and auxiliary equipment. The two-watt power output of the transmitter is more than adequate to cover the desired range, and the unit can be tuned to any frequency in the 890 to 960 mc band. The receiver operates on the same band and is tuned to the second transmitter located in the chemical building of the new plant. The equipment at the plant is identical to that in the service building except that the four tone units are receivers, not transmitters.

The equipment operates on standard 110 volts, 60 cycles, AC power, and draws 550 watts. Also included are four tone transmitters that tie into the pressure transducers at each of the four water tanks located on the perimeter of the city.

Data indicating the height of water in the tanks are wired to the transmitter station housed in the new service building. From here it is beamed by microwave to the water plant for registration on a telemeter control panel. Pen recorders provide a continuous record of the varying water levels. An operator records the readings on a data sheet on an hourly basis.

The operators try to maintain a pressure of 75 to 85 pounds per



A routine check is being made on the second terminal in the chemical building.

Water-level data, microwaved to the water plant, is recorded hourly on a data sheet.

square inch throughout the distribution system. A change in water demand causes the pressure to vary, dropping during the day when industry draws heavily upon the supply, and rising at night when the demand drops off and the elevated tanks become full. To offset these pressure changes, additional pumps are placed into or taken out of service in accordance with the data transmitted by the microwave system.

Centrifugal pumps supply the water and maintain proper pressures in the distribution system. The three units, rated at 4, 6, and 8 mgd, can be operated as single units or in any combination of units. A 10-mgd pump, diesel powered, serves as the standby unit.

Local Installation and Maintenance

Mr. J. K. Young, chief engineer of the Division of Radio, Warren, Ohio, installed the complete microwave system with the aid of two assistants. The system operates 24 hours per day, seven days a week, and requires an extremely small amount of maintenance. Low operating cost and dependability are two additional advantages that appeal to the Water Department.

Chief Engineer Young, who is responsible for operating the microwave system, reports that the system also fits in with the other municipal communications facilities.

Microwave is an indispensable tool in our water works operation. It also adds to the over-all efficiency and dependability of the department.

Power Saws Earn $39,000

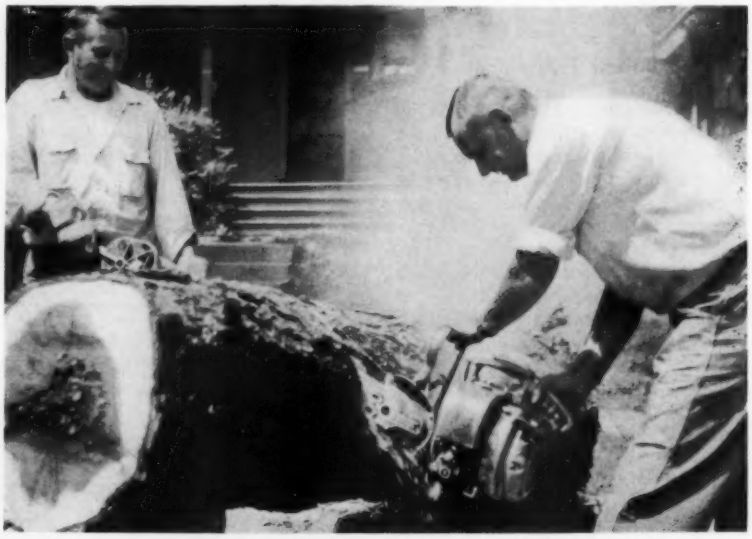
THE Milwaukee Bureau of Forestry has a set of power chain saws that has earned the city $39,000. This savings has been realized chiefly in tree-removal work, not in pruning. The use of chain saws in off-the-ground operations, such as removal of large limbs or other pruning work, is forbidden as a safety measure. The savings represented are derived by transferring laborers, formerly employed at hand-sawing work, to other forestry duties.

Hauling Costs Reduced

The crews also reduce hauling costs by cutting large chunks of wood suitable for use, by citizens, in fireplaces. This eliminates the cost of hauling to the dump and the nuisance of burning.

The bureau's gasoline-powered chain-saw equipment consists of eight Mall 30-inch units, four Clinton 30-inch units, and one McCullough 42-inch unit.

We also have two Mall pneumatic powered units; one is 36 inches and the other is 48. These are primarily used in large-scale operations, such as clearing areas for use as dump sites, new street construction, and other purposes where need of air-powered equipment is practical. The work is done under the direction of Griggs Waring, city forester.



Saws bring all-around savings in Milwaukee.

Incinerators Win in New Orleans

By CARL SCHNEIDER
Consulting Engineer
New Orleans, La.

IN New Orleans, a city surrounded by swamps, incinerators have today won the economic battle with the sanitary fill. The city currently is embarking on a program of incinerator construction for the simple reason that it wants to save money, principally truck-hauling costs.

The decision resulted from a detailed study embracing all practical methods of refuse disposal, including composting and garbage grinding. In the study of composting and garbage grinding it was revealed that the additional separations required presented problems of regulation that would be difficult to enforce. A huge volume of other rubbish would still have to be disposed.

Consequently, the analysis resulted in a comparison of the sanitary landfill with the incinerator. The cost of transportation from the collection areas to the disposal sites was the key to the decision. The city currently is operating a landfill but soon will stop from lack of space.

The investigation also considered the use, for sanitary fill sites, of "batture areas," or land outside the levee embankments periodically covered by water at high river stages. In such cases, barge transports would have had to bring the refuse to the disposal points and the operating areas would have had to be enclosed by confining levees, as protection against high river stages. This was not contemplated, but could be done, if on-site cover material were insufficient or unsatisfactory. The plan had to be rejected because local governing authorities outside the city of New Orleans would not grant permission.

Nevertheless, the analysis matched this against the cost of two proposed incinerators, and one combination incinerator and sanitary landfill. The study showed clearly that the incinerators gave best dollar value.

The "batture area" sanitary fill would require the construction of two wharves, the operation of barges, and the uses of cranes. Consequently, its capitalized cost would be much higher than that found at most fills.

One of the incinerator proposals provides for two plants, each able to burn 400 tons per 24 hours, and the enlargement of one present plant. All would be supplied with mechanical stoking facilities. The alternate incinerator proposal provided for two incinerators of the same size, plus closing down and holding in reserve the present plant that would have been remodeled in the other plan. In each case, the incinerator sites would require a haul of only two miles in almost all cases.

The fourth scheme provided for one new 400-ton incinerator, ending the use of the present incinerator, and starting a new landfill in a very difficult area. No suitable cover material could be obtained at the site and timber mats would be required for the trucks.

A breakdown of the costs, based on 150,000 tons received per year, showed the following results:

	Cost per ton			
	Operation	Interest, Depr.	Haul	Total
Landfill only	$1.90	$0.88	$1.36	$4.14
Incinerator and fill	1.56	0.53	1.54	3.63
Three incinerators	2.10	0.85	0.68	3.63
Two incinerators	1.44	0.75	0.95	3.14

Jet Runway Vacuum Cleaner

JET engines for airplanes need super-clean runways, and the big "Jarc" cleaner appears to be one practical way of producing it. The giant vacuum cleaner was demonstrated recently at Anacostia Naval Air Station, Washington, D. C., and at Baltimore's Friendship International Airport.

One difficulty with the powerful jet engines has been that they can draw up small objects, such as a nut, a bolt, a screw, or a piece of wood. When these enter the air scoop, they immediately meet the jet turbine blades and normally disintegrate the blades and parts of the engine in a matter of seconds. Wire screens have given only partial protection. Apparently the best guarantee against the entry of foreign objects is their complete removal from runways, warm-up areas, etc.

Super-sized vacuum cleaners such as this one will be a common sight on municipal airport runways throughout the country when jet engines are more widely used.

The big vacuum cleaner weighs 15 tons and is about 30-feet long. The vacuum-cleaning equipment is mounted on a specially designed White truck body. Six nozzles arranged over an 8-foot width at the rear of the vehicle do the cleaning. The equipment is manufactured by the U. S. Hoffman Machinery Corporation, New York City. One man can operate the entire unit.

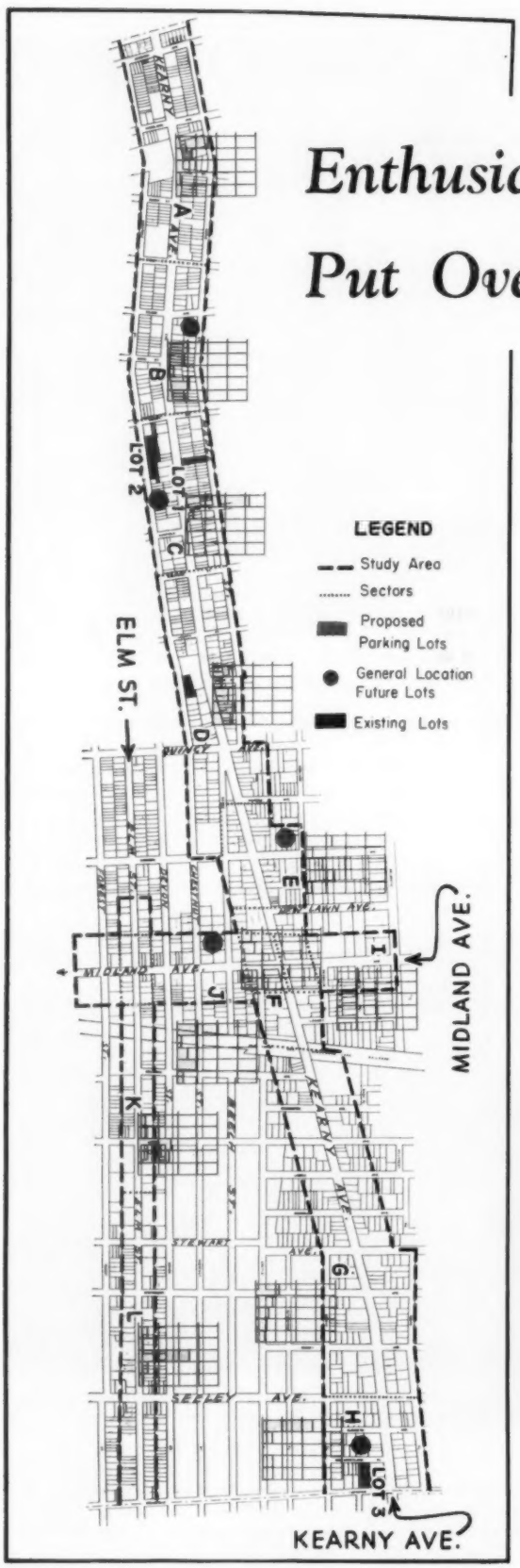
Enthusiastic Citizens Put Over Kearny, N. J., Parking Survey

By HERBERT H. SMITH, *Executive Director*
Community Planning Associates, Inc.
Princeton, N. J.

THE Town of Kearny, lies between Newark and Jersey City, and has a local business area 1.8 miles long. Stores front on the traffic artery, Kearny Avenue, but the depth of commercial development is usually no more than one-half block. Behind the commercial development in all directions, is a solidly built residential area.

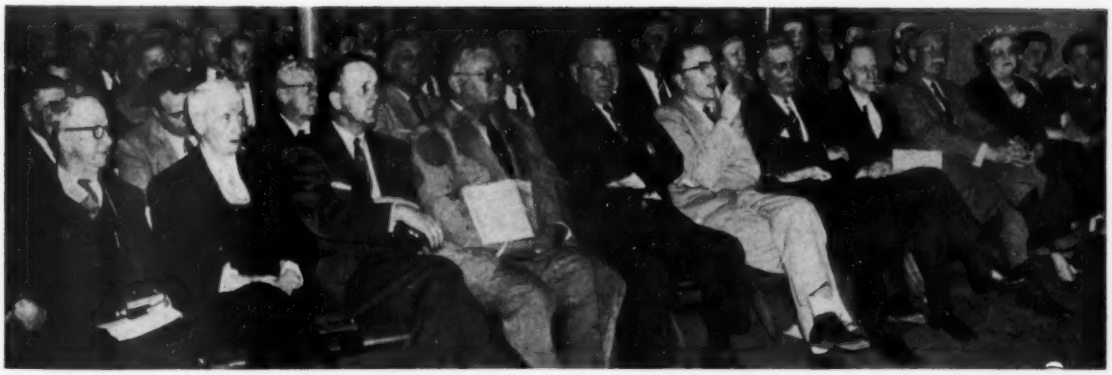
Were this all of the Kearny story, there would be little reason in telling it, for so far nothing is too different from a condition prevalent over and over today. What is different, however, and what makes the Kearny story is how the community has tackled the problem and what has been done so far.

The Planning Board of Kearny headed by its able chairman, Roger W. McAdam, began to work on the parking problem in the early part of 1954. Securing the cooperation of Mayor Joseph M. Healey and the Town Council, arrangements were made with Community Planning Associates to undertake a comprehensive



Above. **Identification lapel badge worn by participants in the survey. It was also printed in the newspaper to familiarize citizens with it and to ask them to cooperate with wearer.**

Left. **Kearny's main street is 1.8 miles and the business district is only a few hundred feet wide. The capital letters on the map are the parking-survey assignments.**



Above.
The 101 citizen participants in the parking survey crew attending a briefing session. The front row is occupied by members of the Kearny Planning Board.

Right.
The questionnaire form that was distributed on the day of the parking survey.

Please answer all questions **Block No.**_____

1. How long did you, or do you expect to park here?_____
2. How long would you like to park here? _____
3. What is your reason for parking? (Check one)
   a. Shopping_____ c. Visiting_____ e. Entertainment_____ g. Work_____
   b. Eating_____ d. Business Call_____ f. Live Near Here_____ h. Medical _____
   i. Other_____ (Specify)
4. What is the location of the place you have been or are going to?_____
   _____ (Name of building or store, street address or street corner)
5. How often do you usually park in this area? (Check one)
   Every day _____ Once a week_____ Once a month _____
   3 or 4 times a week_____ 3 or 4 times a month_____ Several times a year_____
6. How often would you park in this area if parking were available and convenient (Check one)
   Every day_____ Once a week_____ Once a month_____
   3 or 4 times a week_____ 3 or 4 times a month _____ Several times a year_____
7. What is your home address? (Nearest street corner can be used)

_____

_____

_____

19

THANK YOU!!!!

parking study and to prepare a report to the people.

Consultants and Planning Board decided on a one-day survey of parking habits. Civic groups were enlisted to put 100 volunteer workers to counting parked cars. At first, this seemed like an impossible task, but this was only because the spirit and interest of the Kearny citizens were not reckoned with. The civic groups responded almost 100%.

The "volunteers" were promised a "fast-moving" program and on the organizing night over 100 people met at the Kearny Public Library to hear Mayor Healey and Council members explain the importance of the undertaking, the Planning Board members outline the survey, and the consultants explain assignments.

The survey itself was conducted on April 15, 1955, and provided the information on parking used in the report to the Planning Board. Vehicle counts showed the parking time for each car and turnover for on-street parking. All information was assembled on punched cards and tabulated.

The Kearny parking study was submitted to the Planning Board which has presented recommendations for action to the Town Council. The report's nine specific suggestions include revision and codification of parking regulations, amending the zoning ordinance as it relates to parking facilities, revision of on-street parking limits, provision of new off-street parking areas, and suggestions on alleviating parking difficulties that are presently in existence in Kearny, N. J.

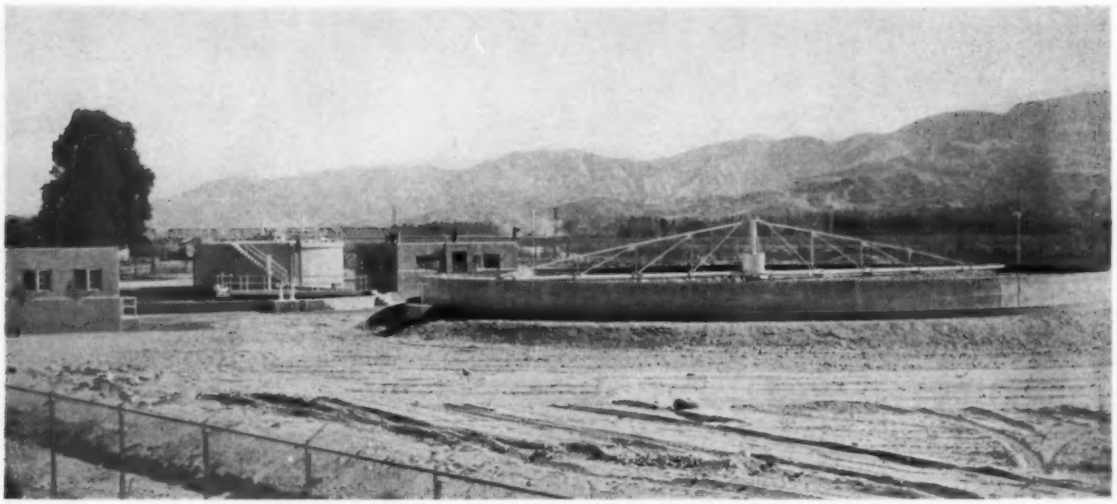
It's too soon for definite results, but in view of the spirit with which the survey was tackled by the officials and citizens, it is reasonable to expect a steadily improving parking situation in the Town of Kearny.

Remote Surveillance of Traffic Volume and Speed

CONNECTICUT State Police officials will soon keep a constant headquarters radar check on traffic conditions on heavily traveled Merritt Parkway. A central knowledge of changing traffic volumes, and speed, should make possible a more effective use of manpower handling accidents and congestion.

The motorists will probably not be aware of the inconspicuously mounted radar antenna that will pick up the rate of speed and the voume of travel on the area under observation. The information will be brought into the Barracks over ordinary telephone circuits. Readings of the meters are traced simultaneously on rolls of recording paper.

This development is the product of Automatic Signal Division of Eastern Industries, Inc., of Norwalk, Conn., working in cooperation with the Connecticut State Police, State Highway Department, and the Merritt Parkway Commission. Principles of radar and modern electronic computers are employed.



Corrugated iron sheets serve as Biofilter enclosure at the Fillmore plant.

Single-Stage Today, Two-Stage Tomorrow

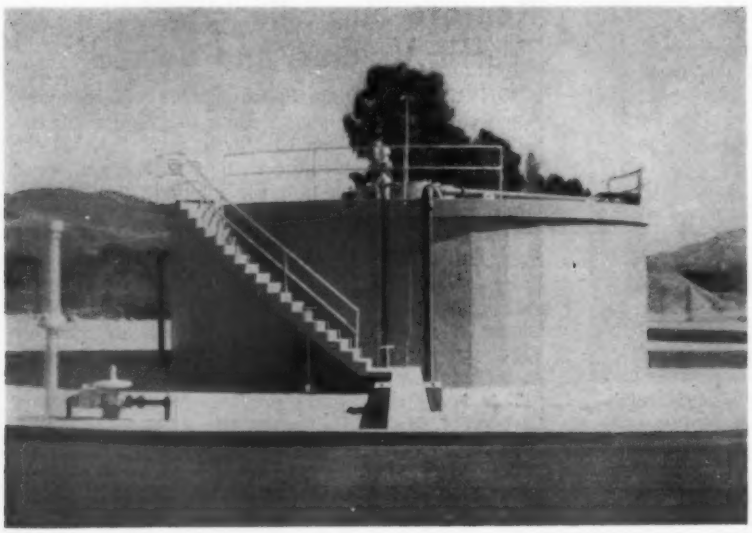
Fillmore, Calif., builds a sewage-treatment plant to a flexible design in order to meet an unpredictable load

By JAMES C. PARSONS, *Partner*
Bennett Engineering Company, Santa Paula, Calif.

AFTER many years of study and an expenditure approaching $750,000, Fillmore, Calif., joined the ranks of those cities served by a modern sewage treatment plant and sewage collection system.

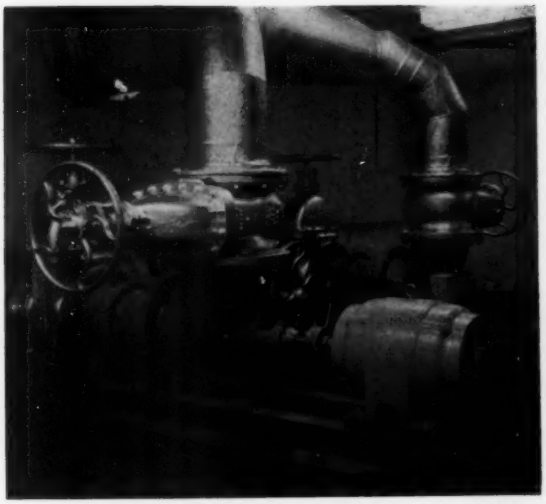
This thriving community of some 5,000 inhabitants is situated in the heart of the citrus area of the Santa Clara River Valley of southern California. Although incorporated in 1914, the community dates back many years and occupies a region once traversed by Father Junipero Serra and his fellow Franciscans when they established and served the missions of California during the latter part of the 18th century.

Although the engineers were not confronted with the lack of fall for the sewer lines, they were pressed to design a collection system that would serve the entire residential area of the community. The city occupies the southerly face of foothills that slope from 2% to 10% toward the Santa Clara River. Road grades are steep and many homes are built well below street-level. City officials solved this problem by obtaining the necessary sewer right-of-way on private land wherever a street or alley was not available on the low side of the adjacent lots. Careful planning produced a collection system that operates entirely by gravity flow. Main sewers vary in size from 6 to 18 inches in diameter and house laterals are 4 to 6 inches



The sludge drying beds are arranged in a group around the sludge digestion tank.

The sludge network is built so that the sludge pumps can perform dual functions by merely opening and closing valves.



Operation of the single-stage propeller-type pumps allows effluent to recirculate from the clarifiers to the Biofilter.

in size. The entire system is made up of vitrified clay pipe joined with "hot poured" CJ60 sewer-pipe compound.

Like most communities, Fillmore continues to expand and will probably continue to do so in the future. This fact was incorporated in the design of the sewage treatment plant. Designed to provide for the needs of 7,500 persons at an average flow of 100 gallons per day per person, the plant provides complete treatment of sewage. Currently, its units supply clarification, single-stage biofiltration with separate sludge digestion. Future expansion of the plant will incorporate two-stage biofiltration. Only one additional Clarifier, biofilter, and a new sludge digester will be needed to double the capacity of the plant.

Treatment Cycle

Before entering the wet well, all sewage passes through a Chicago Pump Company comminutor where large particles are cut to a size that prevents pump clogging or damage. Two Fairbanks-Morse pumps, rated at 600 gpm each, lift the sewage from the wet well to the primary clarifier. The initial design allows for the future installation of one additional comminutor and raw sewage pump, should the need arise. After leaving the primary clarifier, the sewage passes through the Biofilter into a flow trough running through the center of the filter bottom. Here the sewage is divided into two parts; one half returns to the primary clarifier and the other half goes on to the secondary settling tank. Overflow from this tank flows to the effluent holding pond and then to the point of discharge into the sandy bed of the Santa Clara River.

Primary and secondary settling basins are each 60 feet in diameter with a 6-foot side wall depth. Each utilizes Dorr-Oliver sludge removal equipment, scum skimmer, and sludge collector. The effluent collection trough encircling and forming an integral part of each unit, insures a uniform withdrawal of sewage from the basins.

Chlorine is added to the sewage by a model DVS-A Chlorinizer and a Chronoflo transmitter and receiver records the sewage flow. Both units were supplied by Builders-Providence, Inc.

Two Fairbanks-Morse pumps provide the effluent recirculation necessary for efficient plant operation. The single-stage, propeller-type pumps are rated at 2,400 gpm against a total head of 9 feet. Each unit is powered by a 7½-hp electric motor. Effluent is drawn off in equal amounts from the primary and secondary clarifiers and pumped to the Biofilter distributor. Effluent recirculation pumps and withdrawal lines are located in the control house basement.

Flexible Sludge System

A 4-inch Dorr-Oliver plunger-type pump transfers the sludge from the primary settling basin to the digester. Under normal conditions, sludge from the secondary unit is pumped to the primary basin influent well, but it can be transferred directly to the digester if necessary. A 3-inch pump powered by a Sterling vary-speed motor pumps the sludge from the secondary unit.

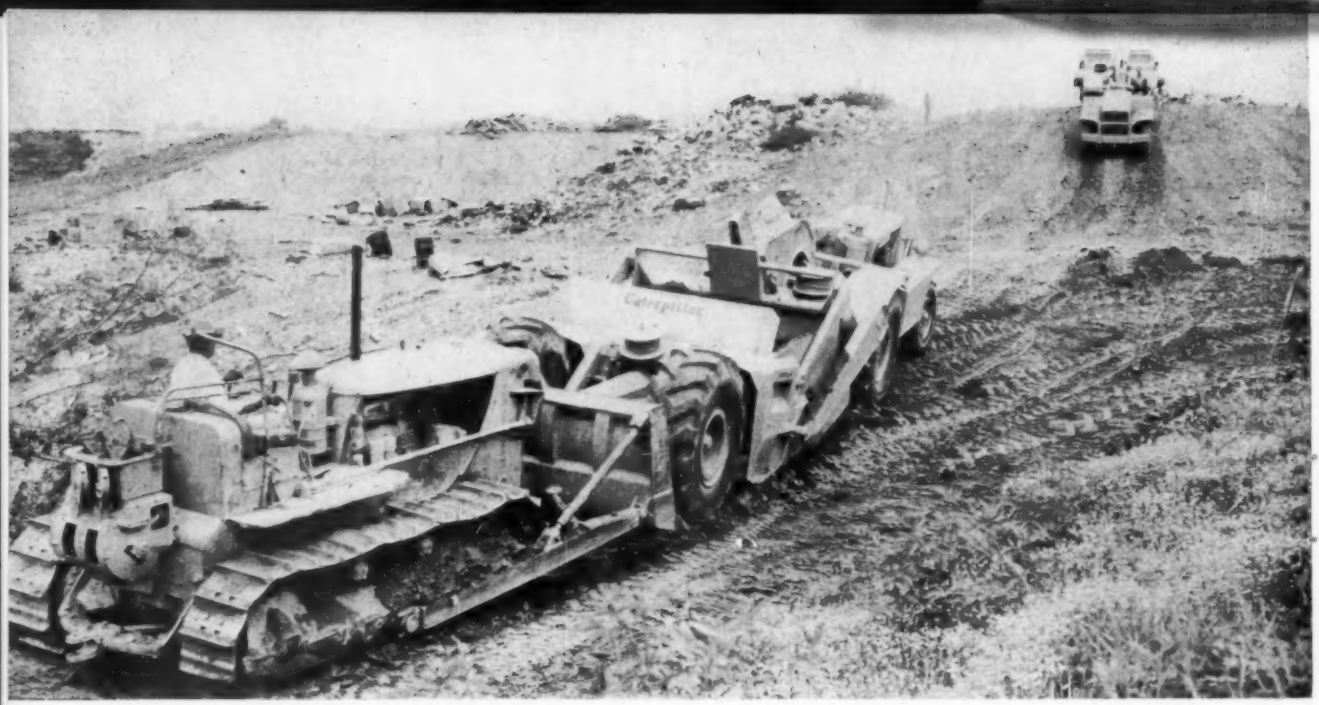
The sludge is heated to a temperature of 97° F. by passing it through a Dorr-Oliver spiral heat exchanger at the rate of 75 gpm. A 3-inch pump driven by a 1½-hp motor circulates the sludge through the heat-exchanger. The sludge line network of 6-inch cast-iron pipe is arranged so that the three sludge pumps can be made to perform dual functions by merely operating the proper valves. The 3-inch pumps, manufactured by Fairbanks-Morse Company, are horizontal bladeless impeller units. The control building basement houses all sludge handling and heating equipment.

Metal Biofilter Enclosure

The Biofilter base is 105 feet in diameter and is surrounded by a circular concrete wall 12 inches high. Each half of the filter floor is a plane surface that slopes 6 inches from a high point on each side of the effluent channel bisecting the structure. The underdrane system is comprised of a 2- by 4-inch redwood grillage resting on concrete sleepers set on the floor at 3-foot centers. Two- by 12-inch slots extending through the filter support wall provide natural ventilation to the underside of the filter bed.

Corrugated iron sheets replaced the usual concrete wall to serve as the Biofilter enclosure. Two horizontal courses of asbestos-bonded galvanized sheets, bent to a 100-foot diameter circle, make up the filter wall. Armco 12-gauge material was used

(Continued on page 166)



On large fills, scrapers often transport the earth cover needed. This shot, taken at Memphis, Tenn., shows a Caterpillar DW 10 tractor with a No. 10 scraper being pushed loaded by a D7 tractor with a 7S bulldozer.

The Sanitary Landfill

Part III: Method and Operation

Concluding discussion of methods and operational method of refuse disposal criteria of the sanitary-fill

By LEO WEAVER, *Sanitary Engineer*
Division of Sanitary Engineering Services
U. S. Public Health Service
Department of Health, Education, and Welfare
Washington, D. C.

TWO important phases in manifesting the sanitary landfill system are method and operation. With suitable land available, the question of operational techniques must be decided. Under the original concept, sanitary landfill methods were placed into two broad categories, one called the *area* method and the other, the *trench*.

The ***area method*** is usually employed in uneven or low locations, where soil conditions in front of the face of the fill do not permit a crawler tractor to operate. The refuse is dumped, compacted, and covered with earth hauled from part of the same or another site, or obtained from the site in use by means of a dragline excavating in front of the face of the fill.

In the ***trench method***, cover material is obtained by excavating a trench. Earth from the first trench is used to build a ramp which is constructed to desired grade. Then refuse is dumped into the initial trench and compacted; earth cover is obtained by excavating an adjoining trench. Depending on the type of soil, about 3 feet are allowed between trenches.

Several years ago, in the search for more efficient means of operation, a method called the ***ramp or progressive slope***, encompassing certain of the techniques of each of the other methods, was developed.

Basically, the progressive slope method employs a technique of obtaining cover material just ahead of the operating face. When applied to the trench method, an initial trench is excavated and a ramp is built. Instead of immediately starting excavation of a second trench, refuse is dumped into the first trench and compacted. Earth cover is obtained by further excavating that portion of the trench remaining free from refuse. A second trench is started when the operating area of the first trench becomes too small to permit further excavation, or when it is not desirable to deepen it further. The latter method is sometimes referred to as the moving trench method.

Similarly, in an adaptation of area trench techniques, this method may be employed by obtaining the cover just ahead of the face of the fill. The controlling factor here seems to be whether or not the equipment can operate in front of the face of the fill. The advantage of the progressive slope method is that the earth cover hauling distance is shortened.

The equipment and personnel required to operate a fill properly will, of course, vary with the amount of

refuse handled, characteristics of the site chosen (such as source of cover material), and the construction method employed. There are four major types of equipment that can be used in operating a sanitary landfill; namely:

(a) Track-type tractors equipped with a bullclam or front-end loader
(b) Track-type tractor with bulldozer (and scraper where needed)
(c) Dragline
(d) Wheeled-type tractor with bulldozer and scraper.

The various equipment companies have data based on experience with their respective equipment.[1,2,3] Some approximations on the use of a tractor equipped to pick up and carry earth are as follows:

Contributing Population	Capacity	Number of Units
Up to 15,000	1 cubic yard	1
15,000 to 30,000	2 cubic yards	1
30,000 to 75,000	3 cubic yards	2

One manufacturer recommends the use of a scraper of 3.5-yard capacity in conjunction with a tractor-dozer in communities of 30,000 to 100,000 population. This combination is especially adaptable to hauling cover material from 200 feet to 500 feet. A bulldozer and a dragline are good when the fill is in an area where some factor, such as the water table, prevents operation of a tractor at the base of the fill. The dragline can operate from firm footing on top of the fill and still obtain the necessary cover material in advance of the face of the fill.

Wheeled-type tractors have application in the operation of sanitary landfills where especially long hauls on the site are required to provide cover. Generally, they are used in conjunction with track-type tractors that place and compact the refuse and are usually considered for use on the larger landfills. In addition, their use has proved advantageous in certain instances because they can be moved from one site to another under their own power.

Personnel

Data reported by the American Public Works Association, in 1948, indicate that an average of six men is required per 1,000 cubic yards of refuse disposed of per day in a sanitary landfill.[4] The primary variable is, of course, the nature of the site being worked. Reported requirements varied from 10.6 men per

TRENCH METHOD

In the trench method, the tractor obtains cover for each day's contribution of refuse by excavating for trenches.

RAMP METHOD

In the ramp or progressive slope method, refuse is placed on the slope of a ramp and the tractor then covers it by bulldozing earth up the slope from the area adjacent to the ramp. This fill is located at Sulphur Springs, Texas, where an International TD14A tractor with a Drott Bullclam bucket is doing the work.

AREA METHOD

The area method is used to build up low ground. The refuse is dumped, compacted and covered by earth brought in from a nearby point.

Cold weather does not have to stand in the way of good performance. This work at Mandan, N. D., where temperatures drop to —40° F., was conducted under the direction of the author, using a Caterpillar D4 tractor with a Traxcavator bucket.

1,000 cubic yards per day at St. Petersburg, Fla., where tidal land was being reclaimed, to 3.3 men per 1,000 cubic yards deposited per day where conditions were more favorable.

Again referring to the sanitary landfill data reported by the previously mentioned 138 cities, all but two of 34 cities with populations of 15,000 or less, were operated by one man; of 38 cities with over 15,000 and under 50,000 persons, 15 used one man to run the entire fill operation, 18 used two men, and 3 reported the use of three men. The demarcation line between using one man and using two men varied widely, but usually occurred in the 16,000 to 25,000 population category. Of 14 cities with over 50,000 and under 100,000 persons, seven reported operating fills with two men, five with three men, and two with more than three men.

Winter and Wet-Weather Operation

Sanitary landfills can be operated in the United States throughout the year, even in extreme winter climates. In Mandan, N. D., a sanitary landfill was operated as an experimental project in 1949 through a winter during which temperatures as low as 44° F. below zero were experienced.[5] Subsequently, many other cities have successfully operated sanitary landfills under similar climatic conditions.[6] The Mandan experiment was carried on at a site having relatively sandy soil. As a result of experience there, the three following possible methods of facilitating year-round operations in extremely cold climate were advanced:

(a) Scarify area prior to frost and insulate with material such as leaves (2- to 3-foot depth recommended).

(b) Excavate trenches in advance and stockpile cover material for use during winter operation.

(c) Possibly excavate undisturbed area. (An undisturbed area is defined as an area which has not had the surface growth and earth compressed, for example, by numerous vehicles passing over it).

Other recommendations with regard to equipment included emphasis on the need for ice and snow grousers, a heated cab for the tractor, and a heated garage for equipment storage and personnel.

Wet-weather operating problems give rise to difficulties because maneuverability of collection trucks, as well as of landfill equipment, can be seriously impeded. The following ideas have been found useful through operating experience:

(a) Well-drained sites with sandy loam soil are preferable.

(b) Access roads should be all-weather roads.

(c) Such materials as ashes or planking should be stockpiled to make them available for the construction of firm surface lanes from permanent access roads to the area of operation when needed.

(d) In extremes, it may be necessary to dump some distance from the operating area and bulldoze material to the area of operation. This practice is advocated, in most instances, only as a final resort.

(e) Where the vehicular load is not prohibitive, the tractor can, in some instances, satisfactorily tow refuse trucks to the operating area.

(f) The use of alternate areas during a prolonged wet period may be desirable.

Such operational techniques will vary, of course, according to the needs of the location of a specific fill site; the aforementioned suggestions are offered merely as guides.

Salvage operations. Scavenging is not recommended. Experience has indicated that it may foster poor housekeeping and attendant nuisances. Where it is found locally expedient to permit scavenging, it should be rigidly controlled by restricting dumping hours, and having regular inspection, and adequate municipal ordinances for enforcement of the proper use of the landfill, and by maintaining adequate cost records.

Operational criteria. In connection with the health implications of sanitary landfills, the Surgeon General of the Public Health Service, in 1939, appointed a board to evaluate landfill operation in the New York City area. The board's report included a list of operational criteria which may be used as basic principles of operation. These principles are:

(a) The face of the working fill should be kept as narrow as is consistent with proper operation of trucks and equipment so that the area of waste material exposed during the operating day will be minimal.

(b) The exposed surface should be covered with earth as promptly as possible for proper operation and, at the close of each day's operation, both the surface and the face of the fill should be completely covered; the object is to make a closed cell of each day's deposit.

(c) It is desirable that provision for sufficient standby equipment be made to prevent delay in covering because of breakdowns or peak loads.

(d) Waste building material, concrete, or other bulky waste material which may harbor rats should not be used for the final surface or side slopes, but should be promptly incorporated into the fill.

(e) The final covering for surface or side slopes should be maintained at a depth of approximately 24 inches.

(f) In case the finished fill has a boundary side slope, the toe of the slope should terminate in a sand-and-gravel-filled ditch. This will prevent raveling of the toe with exposure of some of the waste material, will prevent the burrowing of rodents, and will prevent the formation of puddles by permitting seepage from the fill to be absorbed into the ground.

(g) Spraying of the exposed waste material and adjacent surfaces should be used, when necessary, to allay dust.

(h) As a rule, the layer of refuse should not exceed an average depth of 8 feet after compacting. Where deeper fills are necessary the filling should be carried on in stages.

(i) Control over the blowing of papers should be adequately maintained by the use of movable fencing.

(j) While the maintenance of proper earth covering, as has been recommended, will prevent fires to a large extent, water under pressure should be available for fire-fighting purposes. If scavengers are tolerated, they should be adequately supervised.

(k) All collections of surface water resulting from these landfill operations should

(Continued on page 167)

The City Tells Its Story

Municipal Public Relations

Edited by PAN DODD WHEELER
Executive Director, Government Public Relations Association

Letterhead Survey Has MPR-Import

Official Stationery Is Factor In City's External Relations

LARGE cities formally contact the people they serve 90% of the time by mail; small cities, at least 20%. Most of this is via letters written on official city hall letterheads. In addition, the city uses this same stationery to correspond with such important groups as agencies of the federal government, the state, business firms, bond buyers, industrialists seeking sites, and prospective residents—both business and private. Consequently, a municipality has ample reason to use letterheads that reflect efficiency, impartiality, and, at the same time, receptive friendliness and hospitality.

Factors In Good Letterhead

Several business-design and paper-manufacturing organizations have undertaken research, and reported their findings, to help officials evaluate and improve business stationery. Some of these reports are listed at the close of this article. One of the studies made by the Neenah Paper Co., Neenah, Wis., included a survey to determine what characteristics of letterheads are actually preferred by American business and professional people.

Fundamental to a good business-letter impression, the study emphasized the familiar five factors of good personal impression: a good name, a good appearance, a good voice, a good handshake, and a good sales story. For example, on the letterhead, the city's name should be printed legibly, appropriately, and attractively. No tricks of typography or decoration should obscure the name. The letterhead also often carries the names of those officials responsible for administrative policy.

The study emphasized that, as shoddy, untidy, or inappropriate clothes create a poor personal impression of the man wearing them and the business he represents, a cluttered letterhead, shoddy paper, poor printing, or an overly elaborate design, handicaps city hall correspondence and creates an unfavorable impression of the city government it represents. A "good appearance" stationery-wise, has a favorable effect.

The study showed that a "good voice" has its visual counterpart in the type of lettering used on the letterhead, the art, illustrations, and the quality of printing or engraving. Specialists in the graphic arts have become very conscious that type . . .

. . . is an expressive language which can shout, scream, mutter, or speak like a gentleman.

The "handshake" of the letterhead is the "feel" of the paper. The Neenah analysis suggests that the city official consider his own reaction when he opens an envelope, takes out a letter, unfolds it, holds it in his hand to read. Various qualities and weights of paper have a characteristic feel. The city's paper should express, by feel, a "handshake" that bespeaks soundness and responsibility. Often a heavier weight paper is worth more in impression value than its slight additional cost. Finally, the city hall letterhead must be designed with the recognition that it is the fundamental part of every letter message, the whole letter presenting the "good sales story."

Preferences Guide Design

To determine effective examples, Neenah supplied business executives with 24 well-designed letterheads. These used many combinations of type, monograms and seals, products or services, identifying facts, sales information and slogans. From the balloting, the company developed its "Guide to Preferred Letterheads." The guide is a good checklist to determine the value of your present city hall letterhead or to direct the design of a new city letterhead.

Preferred letterheads contain only essential information. The old-fashioned practice (still prevalent in many cities), of loading the letterhead with details, is no longer in favor. Today's letterheads contain: basic information—city name, street address, city, postal zone, state, and supplemental information, such as telephone number, founding date, and sometimes the names of officers. For city divisions or departments, the same letterhead design should be used with proper identification of the unit of city government.

Design elements include the city's name (with typographic or hand-lettered treatment about equally pre-

ferred): visual identification by monogram, seal, or emblem (There is a strong preference for letterhead designs using such elements); and the city hall or other municipal building or service when these are illustrated via modern techniques. For many cities, the qualification "modern techniques" would mean throwing away the 1880-style engraving showing a lady with a bustle going up the steps (don't laugh: these exist!) or the treeless city hall as it appeared decades ago instead of the present building boasting a giant oak tree by the door.

A Letterhead Impresses

As Neenah aptly puts it, "A letterhead has an impression function like the reception room of an office . . . and many letterheads now in use, that show plant, offices, or products, are eyesores because of the old-fashioned quality of the art used for the illustration. The modern illustrated letterhead takes full advantage of modern art and reproductive techniques to produce the same type of visual impression as a modern office. . . ."

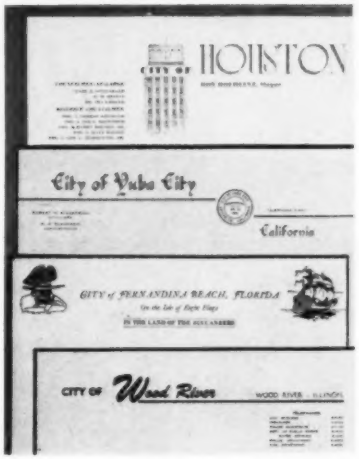
Two colors are preferred in letterheads, printed by letterpress or offset, and a strong preference was registered for steel-die engraved letterheads in red as well as in black. As to ***duplication methods,*** Neenah reports "there are no preferred methods for reproducing letterheads . . . there are preferred letterheads and their design determines the method of reproduction." And, the ***"preferred bond paper*** for any type of letterhead is the one that does the job best at a practical cost." Although a number of the 24 test-letterheads were on colored paper, all the "preferred letterheads" in the Neenah study were on white paper.

Stationery Is PR Tool

The typographic designer's ideal of a letterhead is usually one with a minimum of information. But, Neenah points out, "a letterhead is not primarily a work of typographic art; it is a tool of business"—of your city's business. "And, a good tool is judged by how well it works."

How well does your city's letterhead stack up with these expressed preferences? If redesign is called for, and even the soundest of designs need up-dating and modernization from time to time, the booklets listed at the end of this article (available without charge if ordered on your present letterhead) are among those you'll find helpful. A paper distributor in your own town or city can give you valuable suggestions on letterhead design. Your area printers can provide suggestions on type and illustration and information about reproduction methods and costs of printing.

Impact in a Name!



PR Appeal in Paper

The City "Sales Talk"

As the City Tells Its Story, stated in October 1953, "Public relations . . . is concerned with more than issuance of an annual report or the holding of a press conference. Relations with the public occur in many forms. One official medium of relations . . . is city hall stationery. Its appearance warrants your attention. This medium can serve you well."

Guides to Better Letterhead Design

America Does Business on Nekoosa Bond — Nekoosa-Edwards Paper Co., Port Edwards, Wis.

How to Design a Letterhead—Parsons Paper Co., Holyoke, Mass.

Letterhead Logic—R. O. H. Hill Inc., 270 Lafayette St., New York 12, N. Y.

Neenah Guide to Preferred Letterheads—Neenah Paper Co., Neenah, Wis.

Your Next Letterhead — Hammermill Paper Co., 1542 E. Lake Rd., Erie, Pa.

EDITOR'S NOTE: The drawings on these two pages are from "The Psychology of Business Impression," published by Neenah Paper Co. Letterheads are from the cities indicated.

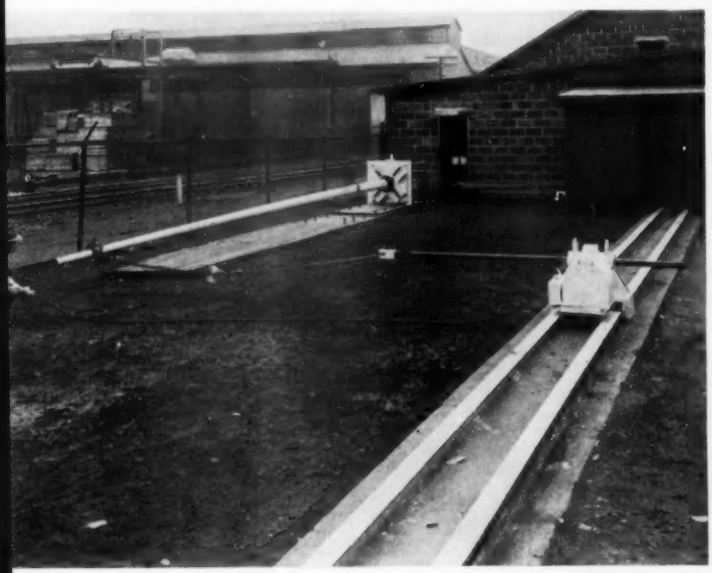
MPR for Better PR: City Seal Contest

A CITY seal or monogram is a "preferred" element for city stationery. It can be a unifying identification mark for other city business forms, bills, annual reports, vehicle identification, certificates, and city keys. Contests for a "best" city seal design can result not only in a seal for the city (or a new, modern design if your city has an outmoded monogram) but also arouses considerable interest in the city. Contestants must "research" the city's history, cultural facilities, business operations, and natural characteristics as material for the design . . . and so learn more about the community.

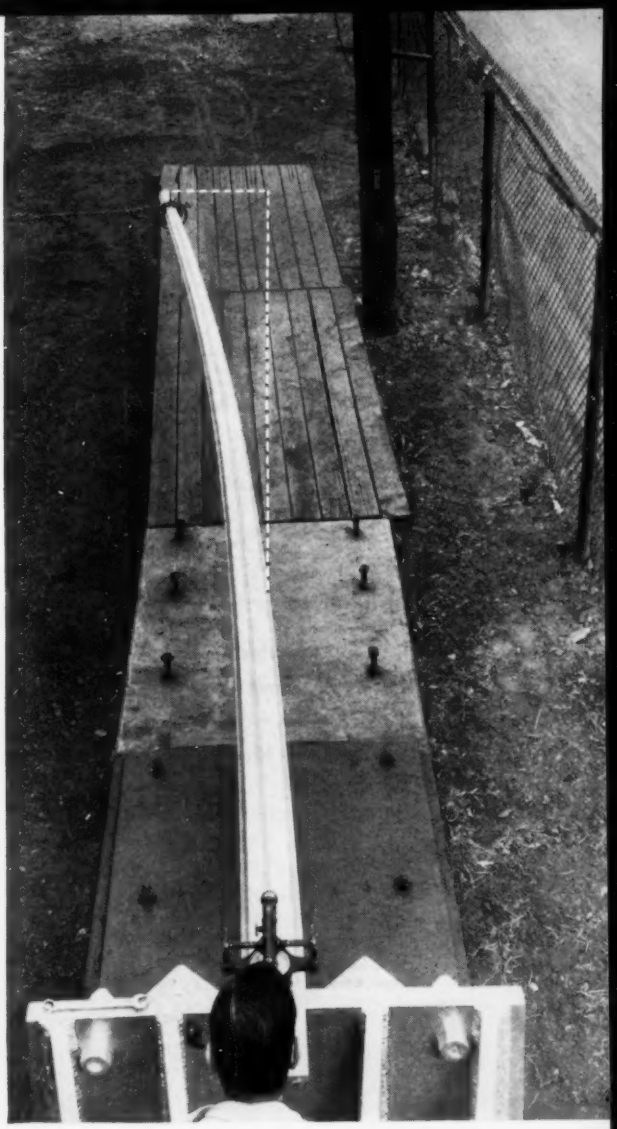
How to Conduct a Contest

A city seal contest might be conducted in a senior high school—with cooperation (and prizes) from the Chamber of Commerce. Or such a contest lends itself to newspaper promotion—with the newspaper carrying daily (or weekly for the smaller papers) information about the city's past, present, and future to arouse interest in the seal-design contest.

Bolting anchor base type Monotube pole to test block. Testing engine assembly will be attached to target ring at left of photo. This apparatus can withstand loads up to 500,000 foot pounds.



Monotube poles are tested in a horizontal position for better observation, closer load control and more accurate deflection measurement. Testing engine (on track) is attached to pole at point where measurement is desired.



Engineer at near end of fluted Monotube pole measures distance of deflection with transit as indicated by the line of sight. This line represents the permanent vertical reference line established by the locked transit.

MONOTUBE LIGHTING POLES . . . PROVED BY TEST.

Continuous testing and research by Union Metal engineers goes a long way towards making Monotube poles *your best buy.*

For example, here's one type of test: The pole is bolted to a heavy plate anchored to a concrete foundation and test load is applied. Load and deflections are read accurately with dynamometer and transit. Loads as high as 10,000 pounds can be applied.

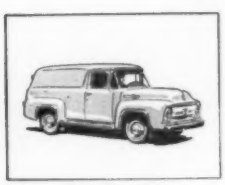
This *proved* ability to withstand excessive stresses and strains, under all loads and weather conditions, is just one of many Monotube plus advantages. Monotube poles, available in a range of sizes and designs, offer attractive appearance, easy installation and complete conformance with recommended lighting practices.

To learn more about Monotube poles for *every* outdoor lighting need, write The Union Metal Manufacturing Company, Canton 5, Ohio.

1906 *Fiftieth Anniversary* 1956

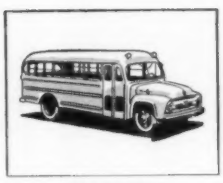
UNION METAL

Monotube Lighting Poles

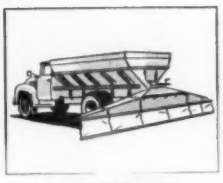


SERVICE PANEL

FIRE TRUCK



SCHOOL BUS



LIME SPREADER

UTILITY TRUCK

For any Public Works job —

Best for miles of extra life, with extra-strong truck chassis

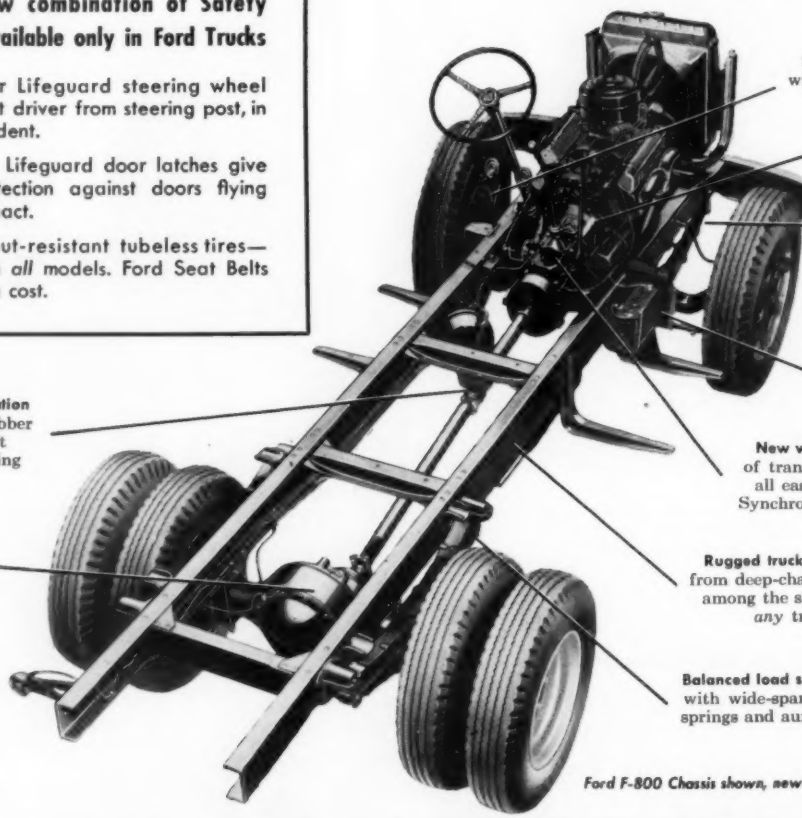
'56 FORD TRUCKS have extra strength in every vital chassis part. New, huskier axles and longer-lived brakes and clutches on many models mean even more service miles for the trucks that *outlast every other leading make* (as studies by insurance actuaries prove).

With a new combination of Safety Features available only in Ford Trucks

Deep-center Lifeguard steering wheel helps protect driver from steering post, in case of accident.

Double-grip Lifeguard door latches give added protection against doors flying open on impact.

New blowout-resistant tubeless tires—standard on *all* models. Ford Seat Belts at low extra cost.



33% longer brake life with new thicker linings

Long-lasting Gyro-Grip clutch with low pedal pressure

Easy-action front springs with double-wrapped rear eyes for added safety

Faster starts, longer life with new 12-volt electrical system

80% less vibration with thick-rubber prop shaft center bearing

New wide choice of transmissions—all easy-shifting Synchro-Silent type

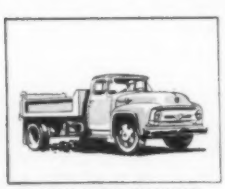
Strong, one-piece banjo-type rear axle housing

Rugged truck foundation from deep-channel frames, among the strongest on *any* trucks

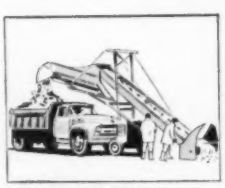
Balanced load support with wide-span rear springs and auxiliary

Ford F-800 Chassis shown, new GVW 24,000 lbs.

Every major body builder builds for Ford

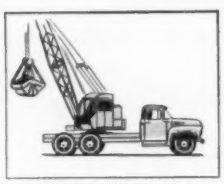


DUMP WITH SCRAPER

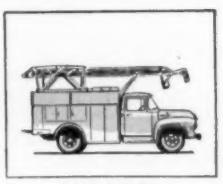


DUMP TRUCK

DUMP WITH SNOW PLOW

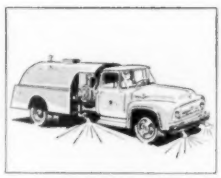


TRUCK-MOUNTED CRANE

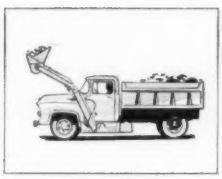


LINE TRUCK

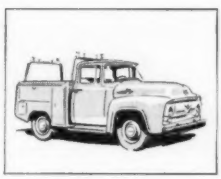
REFUSE COLLECTOR



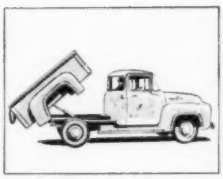
STREET FLUSHER



REFUSE COLLECTOR



LIGHT UTILITY

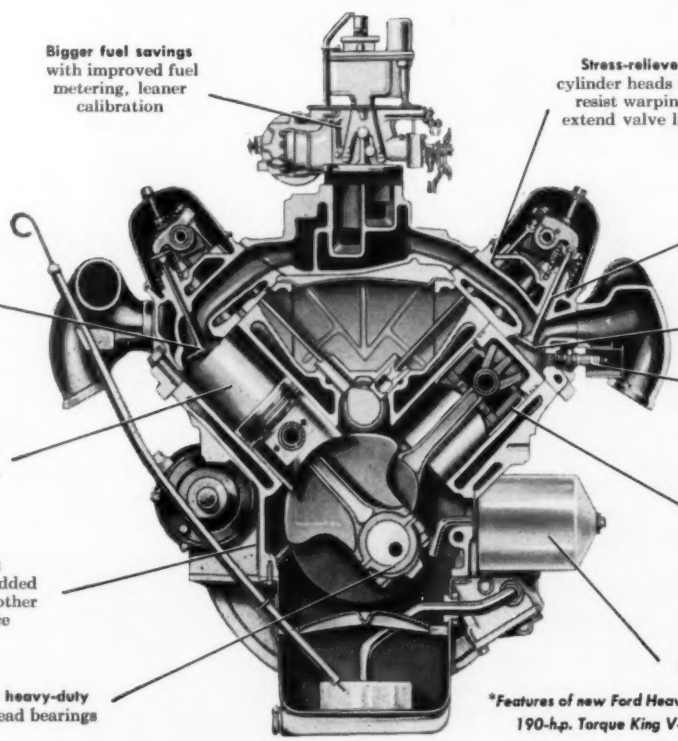


LIGHT-DUTY DUMP

Ford Trucks work the best!

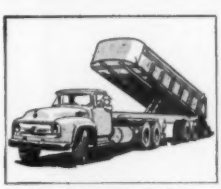
Best for economical operation, long life and low upkeep, with more horsepower per dollar, more heavy-duty haul-ability

'56 FORD TRUCKS offer more horsepower per dollar than any other full truck line ranging from pickups to 65,000-lb. GCW BIG JOBS—proved by comparisons of net horsepower and suggested list prices of *all* trucks! Prove it to yourself by putting a '56 Ford Truck to work on your job.

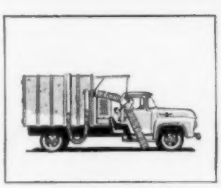

Bigger fuel savings with improved fuel metering, leaner calibration
Stress-relieved cylinder heads that resist warping, extend valve life*
225° cooler valves —new sodium-cooled exhaust valves with tungsten-cobalt facing*
Self-Sealing dish-type intake valves for tighter fit*
Durable, self-cleaning free-turn valves
Anti-fouling 18-mm. spark plugs with new long-life electrodes
Short Stroke design in *every* engine for greater gas savings, longer life
Expansion-controlled pistons with integral steel struts
Deep-block structure for added strength, smoother performance
Full-flow oil filter to clean *all* the oil for longer engine life
Durable heavy-duty copper-lead bearings

Features of new Ford Heavy Duty engines . . . 190-h.p. Torque King V-8 shown.

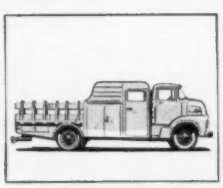
Your Ford Dealer will be glad to help you



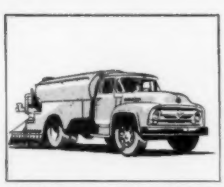
TRAILERIZED DUMP



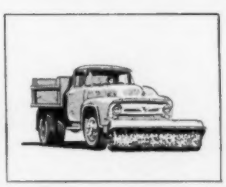
STREET CLEANER



FORESTRY SERVICE



BITUMINOUS DISTRIBUTOR



DUMP WITH BRUSH

Frankfort, Ind., illustrates seeing by direct light reflected from objects.

By R. M. SWETLAND
Illuminating Engineer
Outdoor Lighting Department,
General Electric Co.

Ability to See Under Railway Lighting Systems

INDICATIONS point to the need for a somewhat clearer understanding of the basic factors influencing "how we see" under the various lighting systems currently in use. The following questions advanced by a group of roadway lighting engineers are used as a framework for this discussion.

What is adequate seeing?

It is when the driver discerns all objects in his path of travel to a degree which assures safety and convenience.

A motorist sees at night chiefly by these two methods:

1. Objects silhouetted against a brightness background, as in the Westfield photograph. Here, the illumination level (direct light on the pavement) is usually relatively low—less than 1 foot-candle average. Here, also, the reflecting property of the pavement is vitally important.
2. By light reflected directly from objects, as illustrated by the Frankfort photograph. A higher illumination level is normally involved in this type of seeing; exemplified by retail business street lighting installations and reaching peak in deluxe service stations and toll plazas.

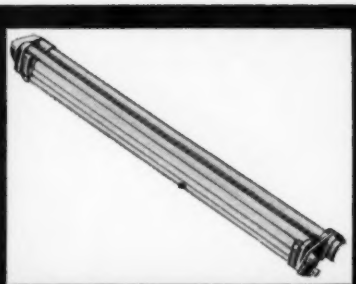
What means are available to the laymen for judging and evaluating roadway visibility?

The human eye—and brain—is the laymen's most widely used instrument for judging night roadway visibility. Can we see as well under system A as under system B? Can we discern objects, obstacles, roadside details, and obtain a true color appearance, and can we do all these things with both ease and comfort?

A layman-engineer, however, probably would use a foot-candle meter—a device measuring direct light received upon a surface. But average foot-candles are only a partial and quite inadequate appraisal of seeing. We do not see, primarily, by virtue of more or less light directed upon an object. Increasing direct

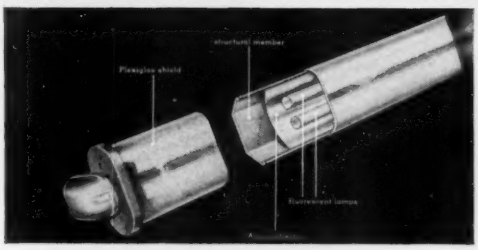
Westfield, N. J., lighting illustrates seeing by silhouette.

The difference between needing... and having...fully compatible outdoor fluorescent lighting



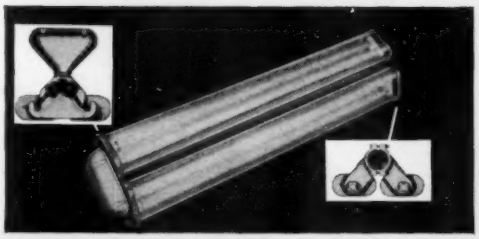
SINGLE LUXaire UNIT

LUXaire cut-out view shows P & K design and engineering features which result in high light output with excellent color retention, and without excess glare. LUXaire is strong, light-weight, and permanently sealed against dirt, water and insects. In 2-ft., 4-ft. and 6-ft. models.



DOUBLE LUXaire UNIT

Two single LUXaire units in one assembly for high intensity lighting with an unusually wide range of light patterns attainable through the P & K designed lateral swivel adjustment of each of the units. Adjusts both laterally and vertically. In 6-ft. models.



P&K LUXaire®

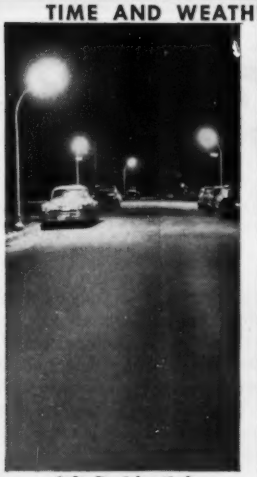
Municipal and commercial installations in greatly diversified geographic areas have proved P & K LUXaire entirely practical.

Produced in single or double units, LUXaire design and construction features provide greatly advanced characteristics in light placement, mechanical versatility, appearance, and maintenance-operation economies.

The P & K LUXaire is produced in a complete family of sizes: 2-ft., 4-ft. and 6-ft. models in single LUXaire units, and 6-ft. models in double LUXaire units, with companion standards if desired.

LUXaire also features a remotely housed ballast, eliminating excessive weight; the need for heavier supporting standards, and obsolescence of the entire luminaire in conversions to high intensity lamps now being developed.

TIME AND WEATHER TESTED LUXaire INSTALLATIONS



4-ft. Residential

6-ft. Commercial Facility

6-ft. Parking Area

WRITE FOR A COPY OF THE P & K LUXaire CATALOG...AND USE THE P & K ADVISORY SERVICES WITHOUT OBLIGATION.

S As filed in Sweet's Catalog.

Pfaff & Kendall 84 Foundry Street Newark 5, New Jersey

PATENTS PENDING

GOLDEN MERCURY LAMP

gives improved "caution" visibility

NEW!

SILVER-WHITE

. . . the most efficient mercury lamp ever made

Produces 10 to 20 per cent *more* light than clear mercury lamps of comparable wattage. Actually adds light, where previous "color improvements" subtracted from the light of ordinary clear mercury lamps. Gives broad output across the whole width of the color spectrum.

Now available in ratings of: 100-watt, 175-watt and two 400-watt types. Write for technical and application data.

Sylvania's scientists have developed a new mercury vapor lamp that gives off a golden-yellow light thanks to a combination of a new, exclusive color-emitting phosphor plus a golden colored glass bulb. This new Golden Mercury Vapor Lamp is highly effective at caution locations as a deterrent to traffic accidents.

Sylvania's Golden Mercury Lamp produces an attention-getting color of light for use at traffic intersections . . . cloverleafs . . . underpasses . . . dead-end streets . . . railway crossings . . . bridges . . . and other danger points on streets and highways. For the most effective street and highway lighting, use Sylvania Golden Mercury Lamps at caution locations and Sylvania's clear or new Silver-White Mercury Lamps for general illumination.

The Sylvania Golden Mercury Lamp is also well suited for floodlighting buildings and other areas, on special occasions, such as during a Golden Anniversary celebration, to attract greater attention.

Sylvania's Golden Mercury Lamp is now available in the popular 400 watt BT-37 bulb size. It is interchangeable with all other standard mercury vapor lamps of this same wattage. For technical and application data, write directly to:

SYLVANIA ELECTRIC PRODUCTS INC.
Lighting Division, Salem, Mass.
In Canada:
Sylvania Electric (Canada) Ltd.
University Tower Building
St. Catherine Street, Montreal, P. Q.

SYLVANIA®

. . . fastest growing name in sight

LIGHTING • RADIO • ELECTRONICS • TELEVISION • ATOMIC ENERGY

illumination from a light source in line of vision may seriously impair seeing due to glare.

Consequently, there appears to be no consistent relation between mere foot-candles on a roadway and overall resulting visibility.

Can we see as well under fluorescent lighting as under mercury or filament lighting?

In equal quantities, "cool white" florescent illumination produces better seeing than with mercury vapor or filament lamps.

The term "seeing" includes ease in object discernment, true color appearance, and desirable comfort.

Is the same amount of light required with fluorescent, mercury and filament sources?

There is no accurate measure for 'seeing ability' under varying quantities of illumination, and from different types of light sources.

A leading manufacturer of roadway lighting equipment has a demonstration installation of 20,000 lumen E-1 clear mercury-lamp luminaires adjacent to fluorescent 4-lamp luminaires (using 72-inch T-12, 'cool white' lamps) at approximately equivalent spacings. Observers stand at the junction of the two systems, in studying the resulting visibility. Their vote has been a 95% testimony favoring fluorescent equipment. A group registering an opinion is informed that the average foot-candle level on the roadway is some 40 to 50% higher under the mercury units.

The Lighting Department of the British Thomson-Houston Company, Ltd., states:

"The chief justification for the use of fluorescent street lighting in Great Britain is the superior seeing conditions provided. In our experience, it has been possible to produce better results with three 80-watt fluorescent lamps than with 400 watts of mercury or 750 watts of filament lighting. This is due, largely, to the much reduced glare; and, wherever high brightness sources are replaced by fluorescent, a reduction in the lumen output of the lanterns should be possible, while still producing better lighting. It is undesirable, however, to reduce the number of units per mile, due to other considerations."

A foot-candle meter.

Do the fluorescent lamps, now employed in roadway lighting, possess inherent characteristics which would appear to substantiate these visibility appraisals?

Yes, namely:

1. A low-brightness source; minimizing glare interference with good visibility.
2. An elongated source, which produces wider and more uniform areas of pavement brightness—effectively aiding silhouette seeing.
3. True color appearance of objects under the brilliant white quality of light from these 'cool white' lamps.

Does the brightness contrast of objects, within the tolerance of human eyes, affect the ability of the motorist to grasp important details in his field of view?

Yes, such brightness contrasts are of utmost importance to effective "seeing ability"—especially along roadways lighted to relatively low foot-candle levels.

Along such roadways—typified by residential streets and secondary urban and interurban traffic arteries—about 75% of a motorist's "seeing ability" is due to such brightness contrasts. Either darker objects silhouetted against a brightness background (the predominating condition)—see Westfield photograph; or a possible reversed condition of brighter objects against a darker background.

Making Old Concrete Posts Go On Working

Concrete pedestals on the Fairmont, W. Va., High Level Bridge are stepped up with an 8-foot aluminum extension and 400-watt fluorescent lamps. A Monongahela Power Company employee is guiding the extension and fixture into position.

LIGHTING has been modernized on a high level bridge belonging to the city of Fairmont, W. Va. The former lights were carried on 37 concrete pedestals. These were 8 feet short of the requirements for the fluorescent lighting.

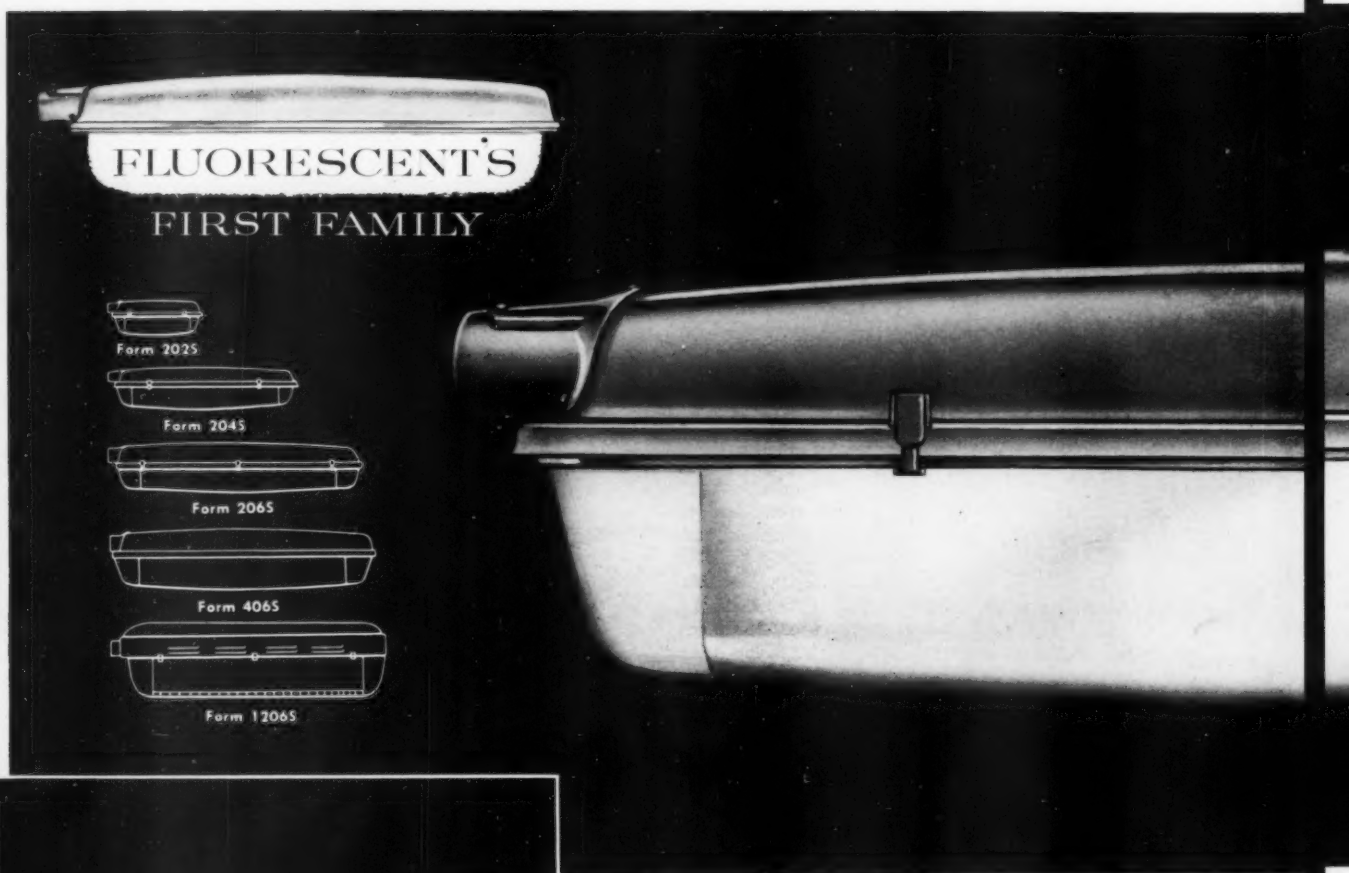
An aluminum extension to fit over the top of the concrete posts was designed by Hubbard Aluminum Products Co., Pittsburgh 1, Pa. It increased the height from 21 to 29 feet.

The installation was recently completed by Monongahela Power Company, which has maintained the bridge lights since 1936. The original 37 pedestals had been equipped with 200-watt incandescent lamps. The aluminum extensions placed on each of the needed 20 standards handled the 400-watt fluorescent fixtures. The

(Continued on page 149)

New G-E form 204S Fluorescent

improves visibility, promotes safety in



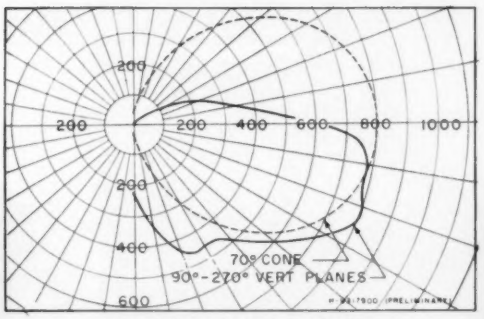
APPEARANCE PROBLEMS of satisfying both residential and business desires, without sacrificing the primary object of better street lighting, are easily solved by the modern appearance these luminaires give to any location.

The new G-E Form 204S Luminaire (6600 lumens) is designed to meet the needs of residential areas surrounded by light business and light traffic streets. The dangers associated with automotive and pedestrian traffic are as obvious as the importance of good street lighting. The soft diffused light over a wide area makes it easy for pedestrian and driver to see each other—minimum luminaire brightness practically eliminates glare. In addition, fluorescent lighting gives exceptional uniformity of pavement brightness—even when pavements are wet. This means greater safety and fewer accidents.

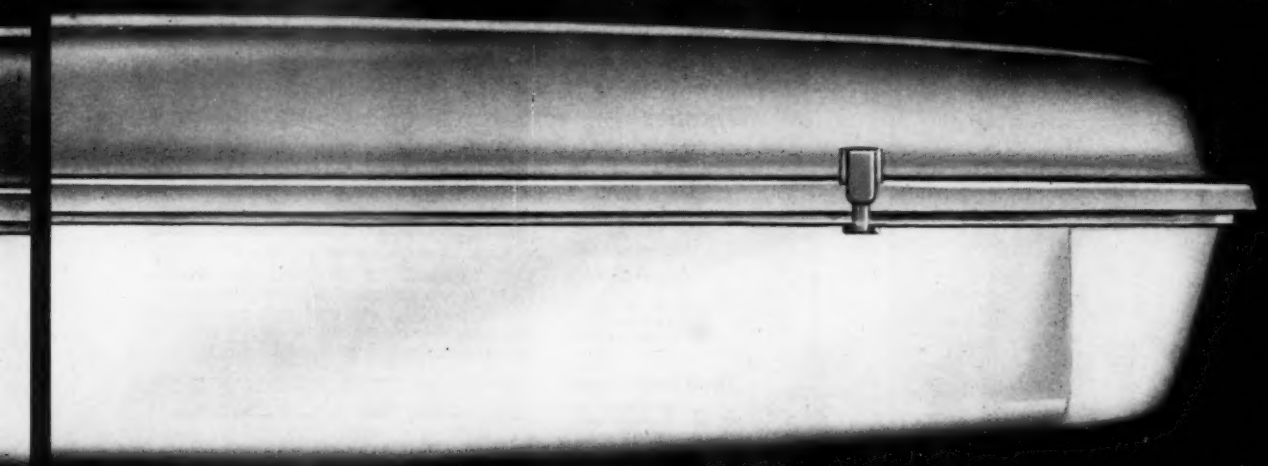
The Form 204S luminaire is another member of G.E.'s revolutionary family of fluorescents, now making it possible to bring all the advantages of this type of street lighting—better visibility, more comfortable seeing, lower maintenance—to every street in the community. It's a development made possible by a co-ordinated design of luminaires, lamps, ballasts and brackets for outdoor service. And each member of this family—whether it's the 202S (2700 lumens), 204S (6600 lumens), 206S (10,600 lumens), 406S (21,200 lumens) or 1206S (64,000 lumens)—contains many

Luminaire

secondary traffic areas



DISTRIBUTION OF INITIAL CANDLE POWER



new structural design improvements to assure installation, operating and maintenance advantages. Some of these advantages are slipfitter mountings, weatherproof engineering, one-piece side-hinged globe, detachable reflector, prewired terminal board, integral ballasts and new, recessed, double-contact-base lamps.

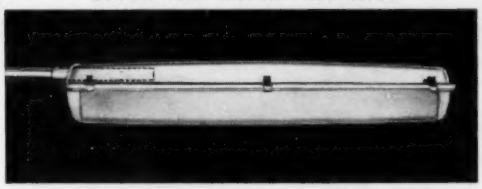
For more information on the outstanding new General Electric Form 204S or any other member of "Fluorescent's First Family," contact your nearest G-E Apparatus Sales Office, or write Section 452-163, General Electric Company, Schenectady 5, New York.

"Out of Darkness," a dramatic 16-mm sound film on how one community met and solved its street lighting problems, is available from your nearest G-E Apparatus Sales Office.

Progress Is Our Most Important Product

GENERAL ELECTRIC

ONLY NEW G-E FLUORESCENT LUMINAIRES OFFER ALL THESE FEATURES



SLIPFITTER MOUNTING . . . pipe bracket slides easily into luminaire, giving perfect support and eliminating heavy, cumbersome clamp brackets. Simple, self-contained, two-bolt adjustment permits fast, easy leveling.

WEATHERPROOF ENGINEERING . . . new, resilient gasketing material between hood and globe provides a uniform, positive seal against all elements. One-piece plastic globe retains clear appearance in all weather.

Favorite Welcoming Committee the World Over...

CROUSE-HINDS

aviation lighting equipment

Wherever pilots fly, for over a quarter of a century they have depended on Crouse-Hinds aviation lighting and weather equipment to guide them safely. Crouse-Hinds has grown up in partnership with the aviation industry – anticipating its demands for better and more specialized lighting equipment – until today Crouse-Hinds offers you the most complete line of aviation lighting equipment in the world. Only a small portion of it can be illustrated here. Contact your nearby Crouse-Hinds office for complete details.

A Complete Line of Lighting Equipment

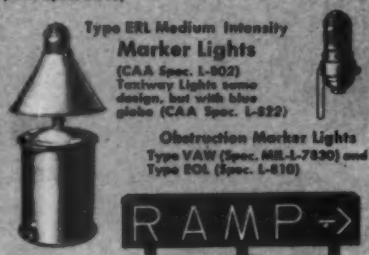
Type DCB Rotating Beacons (CAA Spec. 291)

High Intensity Runway Lights

Type HRC Bi-Directional-Movable Beam (CAA Spec. L-818)

Type HRL Bi-Directional-Fixed Focus (CAA Spec. L-819)

Type HSL Uni-Directional-Fixed Focus (CAA Spec. L-820)



Type ERL Medium Intensity **Marker Lights** (CAA Spec. L-802) Taxiway Lights same design, but with blue globe (CAA Spec. L-822)

Obstruction Marker Lights Type VAW (Spec. MIL-L-7830) and Type EOL (Spec. L-810)

Type TGS Taxi Guidance Signs

Because of ever-increasing ground traffic, larger fields and increased activity under reduced visibility, Crouse-Hinds has led the field in developing a fully approved system of illuminated signs to help pilots to their destination quickly and safely.

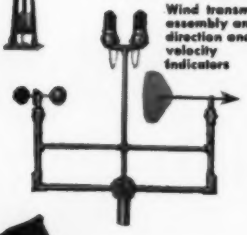
A Complete Line of Weather Equipment

Illuminated Wind Cones

Type WC-36 (Spec. MIL-I-7854) and Type WC-18 (Spec. L-807)

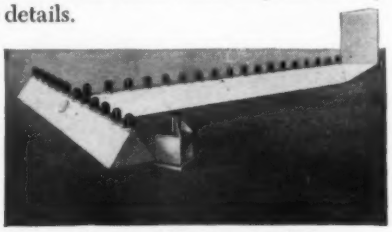
Wind Instruments

Wind transmitter assembly and direction and velocity indicators



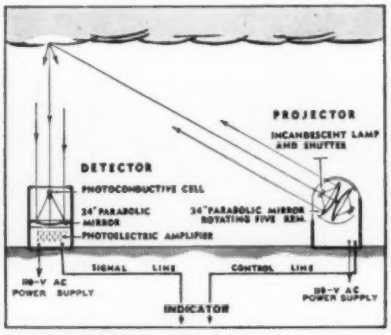
Type PTS Portable Traffic Signals (Spec. MIL-L-6617)

Type UGA Underground Junction Boxes



Illuminated Wind Tee, Type WT

Only Crouse-Hinds offers you wind tees to serve as a continuous night and day indicators of wind direction and preferred landing position. Wind tees can be free floating or remotely controlled, as desired.



Automatic Ceilometer— Transmissometer Systems

Crouse-Hinds' rotating beam Ceilometer system not only provides accurate night and day ceiling readings in the runway approach, but also reads automatically every 6 seconds giving frequent, accurate observations of cloud height at the point where they are most vitally needed.

The photoelectric Transmissometer system provides an exact measurement of visibility in the runway approach regardless of tower location. Even if the tower is encircled in fog or several miles distant from the approach, the tower operator is still always sure if a safe landing can be made when he uses the Crouse-Hinds Transmissometer system.

CROUSE-HINDS COMPANY

SYRACUSE 1, N. Y.

OFFICES: Birmingham Boston Buffalo Chicago Cincinnati Cleveland Dallas Denver Detroit Houston Indianapolis Jacksonville Kansas City Los Angeles Memphis Milwaukee New Orleans New York Philadelphia Pittsburgh Portland, Ore. St. Louis St. Paul San Francisco Seattle Tulsa Washington RESIDENT REPRESENTATIVES: Albany Atlanta Baltimore Baton Rouge Charlotte Chattanooga Corpus Christi Reading, Pa. Richmond, Va. Shreveport Crouse-Hinds Company of Canada, Ltd. Toronto, Ont.

(Continued from page 145)

output is now 440,000 lumens, against 118,325 lumens provided by the 37 original lamps.

Said John L. Eberly, chief engineer for Hubbard: "While the Fairmont installation is practically a custom-made job, the savings effected by modernizing existing standards more than offset the extra cost. We are now designing another installation of this type for Monongahela Power at Clarksburg, W. Va."

The fixtures feature an adjustable mounting bracket that may be tilted from 20 to 30 degrees to direct light more efficiently. The lamps are designed to avoid any significant decrease in light output through a temperature range from 30 degrees below zero to 80 degrees above.

Installation of the new system marks the first phase of a five-year relighting program planned by Fairmont city officials. Similar fixtures will be used in relighting the main business district and the Watson and Bellview bridges.

Relighting Kansas City, Missouri

Part III—*In terms of accidents*

By PAUL C. BOX
Street Lighting Engineer
Traffic Department, Kansas City, Mo.

THE following table presents the first summary of traffic accidents before and after lighting 15 miles of Kansas City, Mo., streets:

	Before		After	
Type Accident	Day	Night	Day	Night
Property Damage	464	253 (35%)	654	342 (34%)
Injury	118	126 (52%)	58	38 (40%)
Fatality	1	9 (90%)	3	4 (57%)
Total	583	388	715	384

The "before" data were taken in 1945; the "after" data in 1947. Since the "before" records had to be taken from years in which war-time restrictions affected traffic movements, the comparison is rather loose, though the showing is in line with what is expected from a relighting job, as the percentages indicate.

By 1950, an ample mileage of arterial routes had been relighted for a widespread study. Almost 8,700 accidents occurring on 97 miles were tabulated. To compare ratios for different traffic classifications, the routes are arranged in three groupings, based on night-hour traffic volumes. (See tables above right). The figures are number of accidents by day and by night and the night percentage of total accidents.

These tables show some interesting facts. The heavier traffic volumes produce larger percentages of the more serious types of accidents at night than do the lighter volumes. It is partly explained by the heavier pedestrian movement on arterial streets. However, the major improvement in night fatalities has been with pedestrians. Congestion occupies the driver's attention so that he often doesn't note hazards in the making.

The general assumption and the accepted figure for many years has been that night travel amounts to about one-third (33%) of the total volume. Of course, it was recognized that summer volumes during the hours of darkness are far less than winter volumes,

	Light (150-500 Veh. Per Hr.)			
	Before		After	
Type Accident	Day	Night	Day	Night
Property Damage	324	201 (40%)	365	200 (35%)
Injury	47	45 (49%)	57	34 (37%)
Fatality	3	3 (50%)	2	1 (33%)
	Medium (500-1200 Veh. Per Hr.)			
Property Damage	1411	828 (37%)	1443	789 (35%)
Injury	172	210 (55%)	152	135 (47%)
Fatality	10	17 (63%)	6	5 (45%)
	Heavy (1200-2400 Veh. Per Hr.)			
	Before		After	
Type Accident	Day	Night	Day	Night
Property Damage	547	323 (37%)	672	340 (34%)
Injury	75	96 (56%)	59	51 (46%)
Fatality	3	8 (73%)	2	4 (67%)
	Total (All Classes)			
Property Damage	2282	1352 (37%)	2480	1329 (35%)
Injury	294	351 (54%)	268	220 (45%)
Fatality	16	28 (64%)	10	10 (50%)

FOOTNOTE: These tables are from material presented by T. J. Seburn before the National Technical Conference of the Illuminating Engineering Society, August, 1951.

based on the same 24-hour total, because of the longer summer day.

Ideally, night accident experience should be related by time of year to night traffic ratios pertaining to the date. However, as the preceding studies have indicated, street lighting provides the greatest improvement in the serious accident categories, and these types are statistically too few to bear even monthly analysis. One alternative, and perhaps the most useful, is to utilize the average annual night volume percentage.

On the basis of 102 monthly "index" counts taken on nine major routes within the city, the following seasonal and average volumes for the actual night period were tabulated:

Midsummer, June 1, 1954 — 17% of Total
Midwinter, Jan. 1, 1954 — 34% of Total
Average, Annual — 26% of Total

A somewhat less comprehensive investigation was

(Continued on page 153)

Favorite Welcoming Committee the World Over...

CROUSE-HINDS

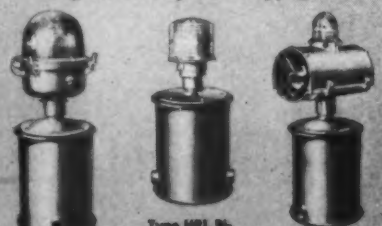
aviation lighting equipment

Wherever pilots fly, for over a quarter of a century they have depended on Crouse-Hinds aviation lighting and weather equipment to guide them safely. Crouse-Hinds has grown up in partnership with the aviation industry – anticipating its demands for better and more specialized lighting equipment – until today Crouse-Hinds offers you the most complete line of aviation lighting equipment in the world. Only a small portion of it can be illustrated here. Contact your nearby Crouse-Hinds office for complete details.

A Complete Line of Lighting Equipment

Type DCB Rotating Beacons (CAA Spec. 291)

High Intensity Runway Lights



Type HRC Bi-Directional-Movable Beam (CAA Spec. L-818)

Type HRL Bi-Directional-Fixed Focus (CAA Spec. L-819)

Type HSL Uni-Directional-Fixed Focus (CAA Spec. L-820)

Type ERL Medium Intensity **Marker Lights** (CAA Spec. L-802) Taxiway Lights same design, but with blue globe (CAA Spec. L-822)

Obstruction Marker Lights Type VAW (Spec. MIL-L-7830) and Type EOL (Spec. L-810)

Type TGS Taxi Guidance Signs

Because of ever-increasing ground traffic, larger fields and increased activity under reduced visibility, Crouse-Hinds has led the field in developing a fully approved system of illuminated signs to help pilots to their destination quickly and safely.

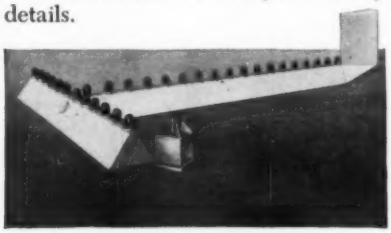
A Complete Line of Weather Equipment

Illuminated Wind Cones Type WC-36 (Spec. MIL-I-7854) and Type WC-18 (Spec. L-807)

Wind Instruments Wind transmitter assembly and direction and velocity indicators

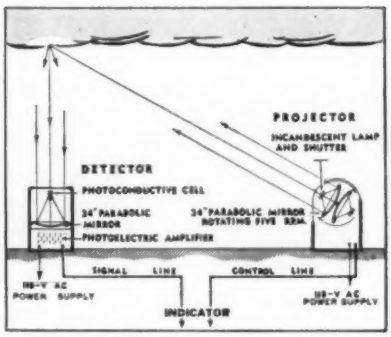
Type PTS **Portable Traffic Signals** (Spec. MIL-L-6617)

Type UGA **Underground Junction Boxes**



Illuminated Wind Tee, Type WT

Only Crouse-Hinds offers you wind tees to serve as a continuous night and day indicators of wind direction and preferred landing position. Wind tees can be free floating or remotely controlled, as desired.



Automatic Ceilometer—Transmissometer Systems

Crouse-Hinds' rotating beam Ceilometer system not only provides accurate night and day ceiling readings in the runway approach, but also reads automatically every 6 seconds giving frequent, accurate observations of cloud height at the point where they are most vitally needed.

The photoelectric Transmissometer system provides an exact measurement of visibility in the runway approach regardless of tower location. Even if the tower is encircled in fog or several miles distant from the approach, the tower operator is still always sure if a safe landing can be made when he uses the Crouse-Hinds Transmissometer system.

CROUSE-HINDS COMPANY

SYRACUSE 1, N. Y.

OFFICES: Birmingham Boston Buffalo Chicago Cincinnati Cleveland Dallas Denver Detroit Houston Indianapolis Jacksonville Kansas City Los Angeles • Memphis Milwaukee New Orleans New York Philadelphia Pittsburgh Portland, Ore. St. Louis St. Paul San Francisco Seattle Tulsa Washington RESIDENT REPRESENTATIVES: Albany Atlanta Baltimore Baton Rouge Charlotte Chattanooga Corpus Christi Reading, Pa. Richmond, Va. Shreveport
Crouse-Hinds Company of Canada, Ltd. Toronto, Ont.

(Continued from page 145)

output is now 440,000 lumens, against 118,325 lumens provided by the 37 original lamps.

Said John L. Eberly, chief engineer for Hubbard: "While the Fairmont installation is practically a custom-made job, the savings effected by modernizing existing standards more than offset the extra cost. We are now designing another installation of this type for Monongahela Power at Clarksburg, W. Va."

The fixtures feature an adjustable mounting bracket that may be tilted from 20 to 30 degrees to direct light more efficiently. The lamps are designed to avoid any significant decrease in light output through a temperature range from 30 degrees below zero to 80 degrees above.

Installation of the new system marks the first phase of a five-year relighting program planned by Fairmont city officials. Similar fixtures will be used in relighting the main business district and the Watson and Bellview bridges.

Relighting Kansas City, Missouri

Part III—*In terms of accidents*

By PAUL C. BOX
Street Lighting Engineer
Traffic Department, Kansas City, Mo.

THE following table presents the first summary of traffic accidents before and after lighting 15 miles of Kansas City, Mo., streets:

	Before		After	
Type Accident	Day	Night	Day	Night
Property Damage	464	253 (35%)	654	342 (34%)
Injury	118	126 (52%)	58	38 (40%)
Fatality	1	9 (90%)	3	4 (57%)
Total	583	388	715	384

The "before" data were taken in 1945; the "after" data in 1947. Since the "before" records had to be taken from years in which war-time restrictions affected traffic movements, the comparison is rather loose, though the showing is in line with what is expected from a relighting job, as the percentages indicate.

By 1950, an ample mileage of arterial routes had been relighted for a widespread study. Almost 8,700 accidents occurring on 97 miles were tabulated. To compare ratios for different traffic classifications, the routes are arranged in three groupings, based on night-hour traffic volumes. (See tables above right). The figures are number of accidents by day and by night and the night percentage of total accidents.

These tables show some interesting facts. The heavier traffic volumes produce larger percentages of the more serious types of accidents at night than do the lighter volumes. It is partly explained by the heavier pedestrian movement on arterial streets. However, the major improvement in night fatalities has been with pedestrians. Congestion occupies the driver's attention so that he often doesn't note hazards in the making.

The general assumption and the accepted figure for many years has been that night travel amounts to about one-third (33%) of the total volume. Of course, it was recognized that summer volumes during the hours of darkness are far less than winter volumes, based on the same 24-hour total, because of the longer summer day.

Ideally, night accident experience should be related by time of year to night traffic ratios pertaining to the date. However, as the preceding studies have indicated, street lighting provides the greatest improvement in the serious accident categories, and these types are statistically too few to bear even monthly analysis. One alternative, and perhaps the most useful, is to utilize the average annual night volume percentage.

On the basis of 102 monthly "index" counts taken on nine major routes within the city, the following seasonal and average volumes for the actual night period were tabulated:

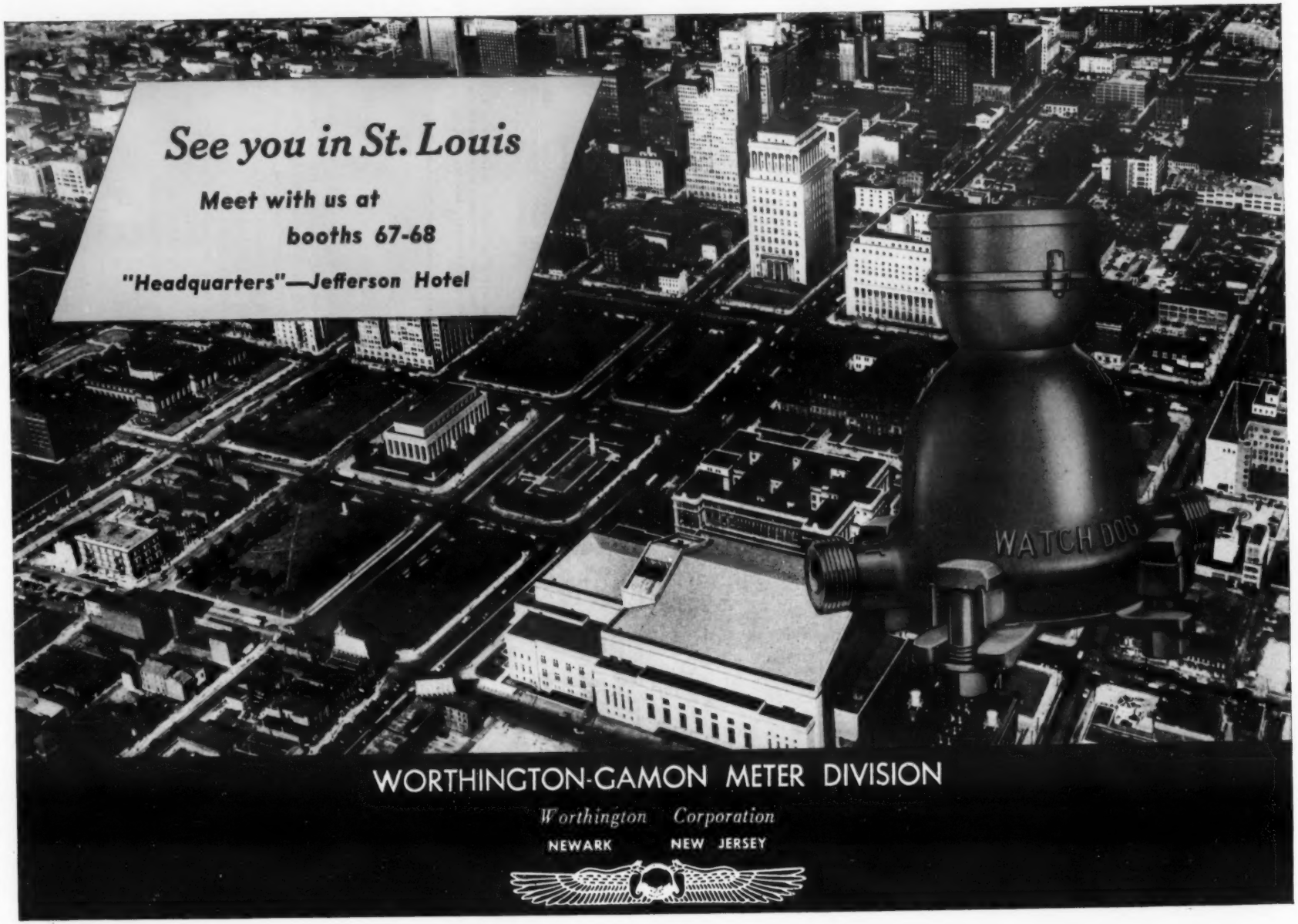
Midsummer, June 1, 1954 — 17% of Total
Midwinter, Jan. 1, 1954 — 34% of Total
Average, Annual — 26% of Total

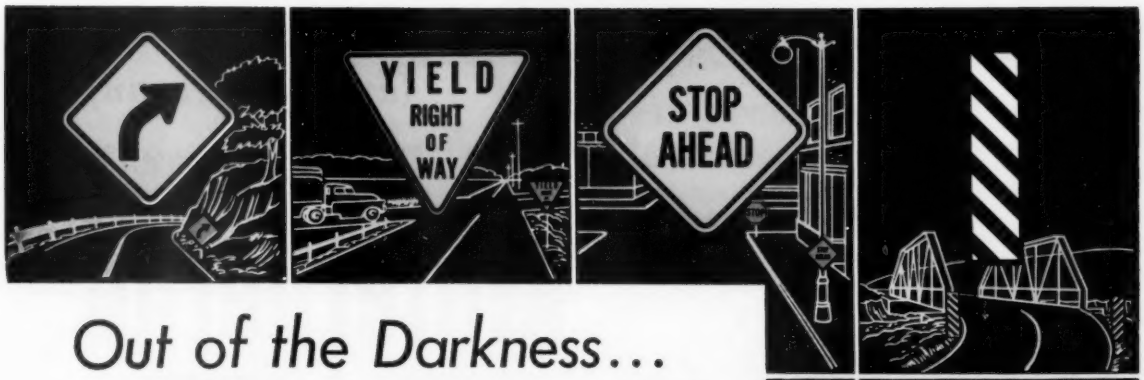
A somewhat less comprehensive investigation was

(Continued on page 153)

Type Accident	Before Day	Before Night	After Day	After Night
Light (150-500 Veh. Per Hr.)				
Property Damage	324	201 (40%)	365	200 (35%)
Injury	47	45 (49%)	57	34 (37%)
Fatality	3	3 (50%)	2	1 (33%)
Medium (500-1200 Veh. Per Hr.)				
Property Damage	1411	828 (37%)	1443	789 (35%)
Injury	172	210 (55%)	152	135 (47%)
Fatality	10	17 (63%)	6	5 (45%)
Heavy (1200-2400 Veh. Per Hr.)				
Property Damage	547	323 (37%)	672	340 (34%)
Injury	75	96 (56%)	59	51 (46%)
Fatality	3	8 (73%)	2	4 (67%)
Total (All Classes)				
Property Damage	2282	1352 (37%)	2480	1329 (35%)
Injury	294	351 (54%)	268	220 (45%)
Fatality	16	28 (64%)	10	10 (50%)

FOOTNOTE: These tables are from material presented by T. J. Seburn before the National Technical Conference of the Illuminating Engineering Society, August, 1951.


See you in St. Louis
Meet with us at
booths 67-68
"Headquarters"—Jefferson Hotel
WATCH DOG
WORTHINGTON-GAMON METER DIVISION
Worthington Corporation
NEWARK NEW JERSEY



Out of the Darkness...

STRONG · BRIGHT · CLEAR

GROTELITE *REFLECTIVE SHEETING!*

Grotelite SS Sheds Water Like A Duck's Back!

Before You Place Another Order For Reflective Material, Shouldn't You Examine These Facts on Grotelite SS!

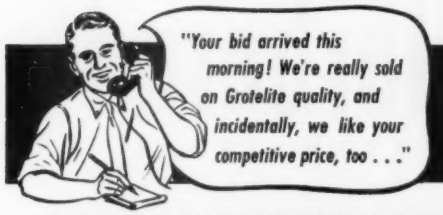
1. Outstanding Target Value!
2. Rugged, Smooth Surface!
3. Entirely Weatherproof!
4. Important Savings!
5. Extra Years of Reflective Service!

Through the dangers of the night, in rain, snow or sleet, Grotelite Reflectorized Signs shine out with long-range brilliance and clearness. Grotelite SS is entirely waterproof and weather-proof . . . self-cleans in the rain. It withstands extremes of temperature and humidity, remains in excellent condition after years of service. Whether headlights are bright or dimmed, this improved reflective sheeting insures maximum sign-to-car warning . . . in *any* weather!

GROTELITE GIVES THE MOTORIST TIME TO BE SAFE!

Today's highspeed traffic requires long-range reflectivity. It's too late to be safe, after the car reaches the sign. Grotelite provides maximum warning where it counts . . . at the greatest distance from the point of danger!

Send Today for Catalog No. 754-T . . . and for Complete Facts!

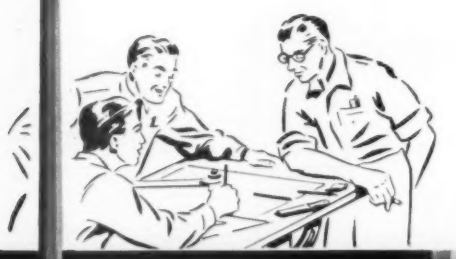

"Your bid arrived this morning! We're really sold on Grotelite quality, and incidentally, we like your competitive price, too . . ."

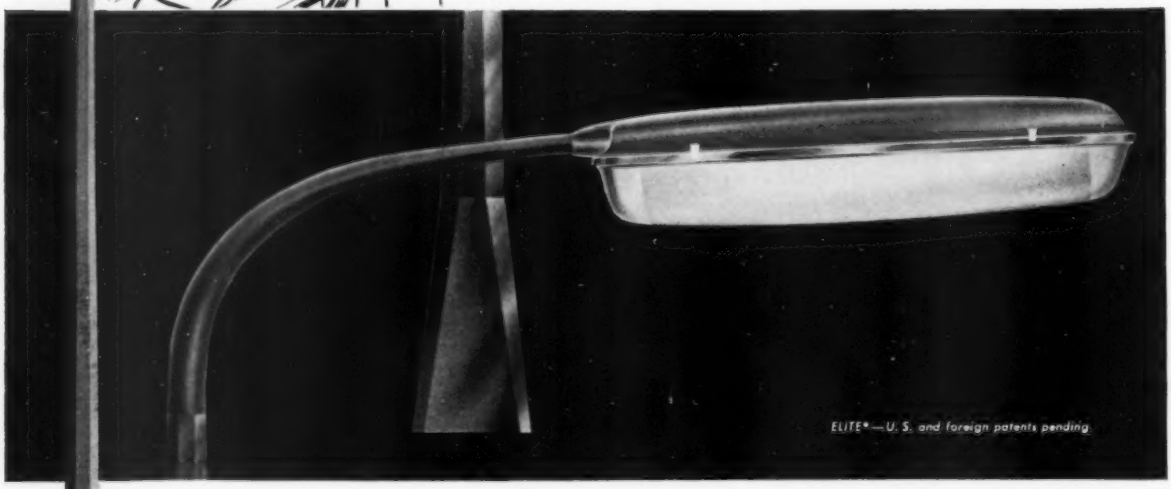
THE GROTE MANUFACTURING COMPANY, INC. • Established 1901 • Bellevue, Kentucky • Opposite Cincinnati

Classic Beauty
(and longer span)
for Fluorescents

Millerbernd

Elite* LIGHTING STANDARDS





Get all the facts about modern street lighting!

This new booklet explains how modern lighting will benefit your city or development. Describes the complete line of Millerbernd lighting standards, with engineering specifications and recommendations. *Write for it today!*

There is no mistaking *this* beauty! Shown here is the newest addition to the Millerbernd family of fine standards. A new version of the proven "Elite", it is designed expressly for fluorescent units of the slip-fitter type. See how simply, how gracefully the "Elite" lengthens the span of the luminaire. There is a model for every lighting need . . . and all are made of extra-strength steel.

Developed and introduced by Millerbernd, thousands of "Elite" davit-type standards are now in service all over the country. The distinctive "Elite" style is first choice everywhere for fine thorofares and shopping centers because its functional design is easily recognized and remembered.

To be assured of long life and the latest in styling *always* . . . specify Millerbernd.

Millerbernd . . . first with the finest!

Millerbernd

MANUFACTURING CO.
WINSTED, MINNESOTA

(Continued from page 149)

similarly made on 20 residential streets selected at random. Seasons were equally represented by equivalent volumes. Results of this study were quite similar to those of the arterial routes:

Summer — 17% of Total
Winter — 31% of Total
Average — 24% of Total

On the basis of these examinations of the traffic volume records, apparently Kansas City, Mo., streets are moving about one-fourth of their vehicles during the night hours. Consequently, the ideal goal of our street lighting should be harmony between volume and accidents; i.e., approximately 25% of the accidents occurring at night. The figure could be even less, in view of reduced crowding at night; but drunken driving, more prevalent in the evening, offsets this challenge. Lighting has aided the alcholic driver by increasing his sight distance but not sufficiently to offset his increased perception and reaction time.

With the expansion of the lighting program to the far corners of the city, it is possible to make a direct, year-by-year comparison of all accidents within the city boundaries, against the growth of the relighted street system.

The following summary relates the accidents by type, and indicates the *percentages* of both arteries and total streets which have been relighted by the end of each year. Due to the annexation, in 1950, of a large but sparsely populated area yet to be lighted, the percentage shown under "Total Streets Relighted" tends to be somewhat misleading, since actually about 93% (instead of 86%) of the main city total mileage had been completed by the end of 1954.

Aside from this, the figures are representative of the city's record, because relatively few accidents have been recorded in the new area.

Night Accident Rate (City-Wide)
Kansas City, Missouri

Percentage of Accidents Occurring at Night, By Type, on Lighted Streets (old and new style equipment)

Year	Type			Lighting Progress End of Year	
	% Fatal	% Injury	% Property Damage	% Arteries Relighted	% Total Streets Relighted
1944	62	43	35	0	0
45	57	50	38	1	0
46	61	52	40	6	2
47	55	44	34	29	6
48	40	44	36	55	12
49	56	42	38	62	21
50	50	40	37	76	32
51	35	39	33	92	47
52	39	40	33	98	57
53	48	37	28	98	74
54	37	33	28	98	85

This table, with its broad scope, reflects a truly encouraging, general decrease in all types of accidents. While many ways of expressing the improvement might be employed, perhaps the theoretical saving in lives; human misery, and financial loss would be most appropriate. Had the 1944 night percentage rate prevailed through and including 1954, the following numbers of accidents would have occurred *beyond the* actual totals:

Fatal — 53
Injury — 190
Property Damage — 1303

First Luminaires Leave Hendersonville

GENERAL Electric's outdoor lighting department, formerly of Lynn, Mass., is now in business in Hendersonville, N. C. The first street-lighting luminaires have been shipped from the $8,000,000 plant.

The new plant will employ 700 people of whom some 600 will be residents of the Hendersonville area; and the other 100 are employees transferred from Lynn.

Full-scale demonstration streets are being constructed to show the value of various types of fluorescent, mercury, and incandescent street-lighting luminaires.

Pittsburgh's New Gateway To the Sky

IN the rolling farmlands of Moon and Findlay townships, 11 miles west of the Golden Triangle as the airlines fly, is Allegheny County's 1,600-acre monument to aviation—the $33 million Greater Pittsburgh Airport.

The terminal building is twice the size of the administration building at either Washington's National Airport or New York's LaGuardia Field. It contains 500,000 square feet of space and handles 3,000,000 visitors and 1,250,000 air travelers a year.

Integrated with the airport's architecture is a $2 million electrical system, which supplies enough electricity to fill the residential needs of a city of 18,000. Electricity supplies not only lighting but air conditioning, the elevators and escalators, and the electronic communications apparatus in the control tower. The lighting system in the offices, shops, stores and other areas where critical seeing jobs are done provides an intensity of 50 foot-candles.

The plane loading station, accommodating 16 giant airliners simultaneously, is illuminated by lighting units recessed in the wall of the terminal building and equipped with 300-watt and 750-watt lamps. Conduits under the field apron, taxiways, and runways provide lighting for approaching planes.

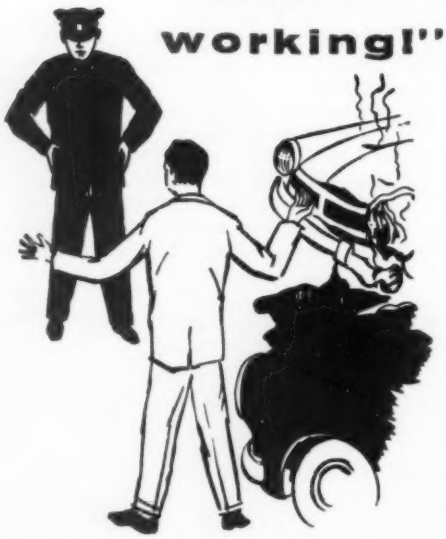
The driveway to the terminal building has high intensity illumination to permit an eye-adaptation period for drivers entering the building from outside daylight. Continuous rows of troffer lighting are alternated with continuous rows of surface units. On the parking plaza and in the parking lots, modern mercury vapor street lighting is installed. The most recent addition to enhance the splendor of the airport is a spectacular, block-long electric fountain and cascade of water.

H. L. MURPHEY, *Duquesne Light Company*

* * *

"I OFTEN SPECULATE about how amazed the founders of the Illuminating Engineering Society would be if they could regather with us today to look upon the advancements we have made since that day. I am certain they would be amazed to learn of the great contribution the electric lighting industry has made to the national safety through the perfection of high-intensity mercury and fluorescent street lighting, and through the most recent development of flasher lighting systems at airports to aid pilots groping through dense fogs for safe landing." —Robert F. Hartenstein, General Supervisor of Commercial and Farm Sales, Ohio Edison Company, Akron, Ohio, and also president of the I.E.S.

"but the light wasn't working!"



Maybe the poor chap was right! Failure of traffic signals—owing to faulty connections causes many accidents. Big danger spot—the terminal!

Be sure the terminals in your community's traffic-control system give maximum protection against human error and the strain of operating conditions.

PRE-INSULATED Diamond Grip TRADEMARK TERMINALS . . .

are precision-engineered for safety, dependability, tensile strength. They are vibration proof . . . won't be weakened by rumbling traffic . . . because they provide insulation support. PIDG are corrosion resistant . . . won't be damaged by exposure . . . because their copper is electro-tinned and pre-insulated.

Many traffic-control manufacturers are already using A-MP Pre-Insulated Diamond-Grips in their original equipment. You, too, can be sure of better, safer electrical connections by using A-MP terminals in maintaining this equipment.

An API field representative will be glad to show you how easy the terminals are to apply with A-MP Certi-Crimp tooling . . . and how little they cost. He can prepare a kit of terminals and connectors suited to your specific requirements . . . together with the proper crimping tools.

API branch offices stock popular A-MP terminals and tools for maintenance and repair purposes. Contact your local API office for a catalog.

Atlanta, Ga.
Boston, Mass.
Chicago, Ill.
Cleveland, O.
Dallas, Texas
Detroit, Mich.
Hawthorne, Cal.
Maplewood, N. J.
Philadelphia, Pa.
Pittsburgh, Pa.
St. Louis, Mo.
San Francisco, Cal.

api TRADE MARK
AMERICAN PAMCOR, INC.
A subsidiary of Aircraft-Marine Products, Inc.
181 Hillcrest Ave., Havertown, Pa.

Outdoor Lighting

Better Lighted Boonton, N. J.

MERCURY vapor lamps have been installed for a half mile on Main Street in Boonton, N. J. The street is 34 feet wide and paved with asphalt.

The installation consists of 23 Hubbard tapered aluminum poles with transformer bases and 6-foot tapered elliptical brackets. From these 6-foot brackets, overhanging the street at a 30-foot height, are suspended 20,000-lumen General Electric mercury vapor luminaires. Units are spaced 103 feet apart in staggered arrangement.

This system replaces 25 luminaires mounted 26 feet high on ornamental iron poles spaced 116 feet apart and staggered. The average illumination was 0.54 foot-candle. The intensity of the new system is 1.4 foot-candles, an increase of 150%.

The total street lighting appropriation for 1956 is $18,000, an advance of $6,000 over that of the previous year. This increase consists of $3,000 for boost in annual lighting expense and $3,000 for better residential street lighting.

EDWARD J. TONER
Mayor
Boonton, N. J.

"Silver" and "Gold" Mercury Vapor Lamps

Constance Duprey of the Lighting Division laboratories of Sylvania Electric Products, Inc., holds one of the new Silver-White mercury lamps which yields 10 to 20% more light output than do standard mercury vapors.

TWO new lamps—the Silver-White mercury lamp and the Golden mercury lamp—are available for lighting streets and highways. Silver-White is said to produce 10 to 20% more light output, depending on lamp size, than standard mercury vapor lamps.

This is the first time a color-corrected mercury vapor lamp has been produced which provides more illumination, rather than less, than clear mercury vapor lamps. The high light output of the Silver-White lamp and its color recommend it for residential street lighting. For further information write Sylvania Electric Products, Inc., 1740 Broadway, New York 19.

ANOTHER REASON WHY UTILITIES EXPECT MORE FROM

POWERS *American*

Setting the pace...

Pole-Master®

HYDRAULIC DERRICKS

3 MODELS... 7 SIZES

You just can't beat the cost-cutting convenience of Pole-Master. At the flick of a lever, powerful hydraulic cylinders move the derrick to the position that's *exactly* right for the hoisting job. There's no exposed mechanism. Head sheave can be threaded from the ground.

When it comes to capacity, Pole-Master equals or surpasses conventional derricks of comparable rating. It stows *above* the body... never obstructs valuable cargo area space.

Aren't these the features you've long wanted in a derrick for your job?

The powerful Series PM-2 Pole-Master, shown above on a Powers-American Series 800-C Line Body, is available in sizes for handling 40′, 55′, and 70′ poles.

DESCRIPTIVE LITERATURE ...plus complete price information IS YOURS FOR THE ASKING!

McCABE-POWERS AUTO BODY COMPANY

5900 NO. BROADWAY • ST. LOUIS 15, MO. 625 CEDAR ST. • BERKELEY 10, CALIF.

Series HD-2 Pole-Master Derricks can be furnished in sizes for handling 40′ and 55′ poles.

The Series HD-4 Pole-Master, actuated by four hydraulic cylinders, handles 55′ and 70′ poles.

Powers-American conventional derricks, tripod or T-type, are available in all sizes and capacities.

the new Philadelphia story

. . . the story of what has happened to traffic on historic Broad Street

Traffic congestion—the plague that is paralyzing almost every city—had transportation clogged along the more than seven miles of Broad Street.

Imaginative traffic signal engineering and modern equipment were called on to give this famous thoroughfare new efficiency. Now, the signal light timing on Broad Street is automatically adjusted by changing traffic needs—all day, every day, as they occur.

Roadway treadles continuously monitor the cars moving in both directions on Broad Street. A Master Control compares flow and counter-flow, and establishes the time cycle and offset pattern of signal light operation to serve current traffic best. As traffic needs change, the pattern of signal operation changes.

Every Broad Street intersection has side street vehicle detectors, pedestrian push buttons, and a signal light controller. These divide green light time at each corner according to its individual traffic needs with minimum interference to the major Broad Street flow.

The new electronic signal equipment enables Broad Street to serve its traffic better these days. There is less stopping, less waiting, less unnecessary delay. There is more orderliness, more freedom, more efficiency of movement.

Let Automatic Signal tell you how practical imagination can help solve your traffic signal problems. Write for Bulletin E-222 on "Electro-Matic ®Master".

AUTOMATIC SIGNAL DIVISION
EASTERN INDUSTRIES, INCORPORATED
NORWALK • CONNECTICUT

Fringe Parking with a Purpose

SIX or seven years ago high hopes were held for fringe parking. But locating fringe parking lots without rhyme or reason, instead of planning them for an essential use, dashed those hopes. Then the basic plan was put forward by the *Municipal Index* and THE AMERICAN CITY to encircle each business district with a belt highway or street system, and locate the fringe parking fields along this belt. This tied the fields together and, in the larger cities, made possible bus service to them.

The subject is discussed on this page. It seems to be proving successful where it is soundly established. It isn't off-street parking that reduces congestion sufficiently; as a rule it is removing commuter parking from the business district.

Commuters tend to arrive and leave at about the same time. They *are* congestion. Whether they have parked in a downtown lot or a garage downtown, they come out of it around about the same time and tend to fill the street with cars.

If this twice-a-day jam becomes sufficiently severe, the idea of leaving the car at a parking field attached to the belt around the business district will look better and better. When it looks very good indeed that's the time to provide it and as many other such fields as the area can fill.

Proper Fringe Parking Works

AS an alternative to securing high-cost land for off-street facilities in the central district, some cities have established fringe parking lots. More cities are learning that when these parking areas are located along a ring or belt street and highway system around the business district they are likely to be still more popular. Located on the downtown edge or beyond, such lots have a number of advantages besides their inexpensiveness.

Given popular acceptance, they can help to reduce traffic congestion, since they siphon off cars which commuters and other regular visitors downtown would otherwise drive into the central area. This in turn releases curb and off-street spaces in the core area for short-time parkers like the shopper. Fringe lots also can help generate needed business for transit, whose shuttle-buses are usually an intrinsic part of fringe parking operations.

Louisville, Miami, Washington, Philadelphia, New York, Boston, Chicago, and St. Louis are some of the cities that have tried fringe parking with more or less success.

A survey of St. Louis' "Park-Ride" system by the Automatic Safety Foundation indicated that two-thirds of the perimeter parkers formerly used private cars exclusively to get downtown. In Washington, D. C., however, it was found that less than 10% previously had used automobiles for their trips.

Of 508 fringe parkers interviewed in St. Louis, 308, or 60%, were workers. Seventy per cent of the respondents said that the combined Park-Ride service brought them nearer their destination than when they parked their cars downtown.

Where fringe parking has failed, either the location of the lots has been too remote from the central area, the bus service has been too infrequent, or the price too high. Cleveland attributes the outstanding success of its perimeter lots to the fact that they are situated only several blocks from downtown, the buses maintain a four- or five-minute headway, the fare is 10 cents, and the parking facilities are free.

Naturally, a well-rounded parking program that provides ample close-in, intermediate, and fringe facilities will bring most benefits to the downtown community. In striving to give the shopper a better "break," it is important to remember that workers also buy. The fact that they are captive shoppers does not mean that their patronage is any less valuable to the downtown stores—or that their parking needs can be ignored with impunity. Not only should their needs be met by lots located on a ring, but the logic and advantages of these modern facilities should be explained.

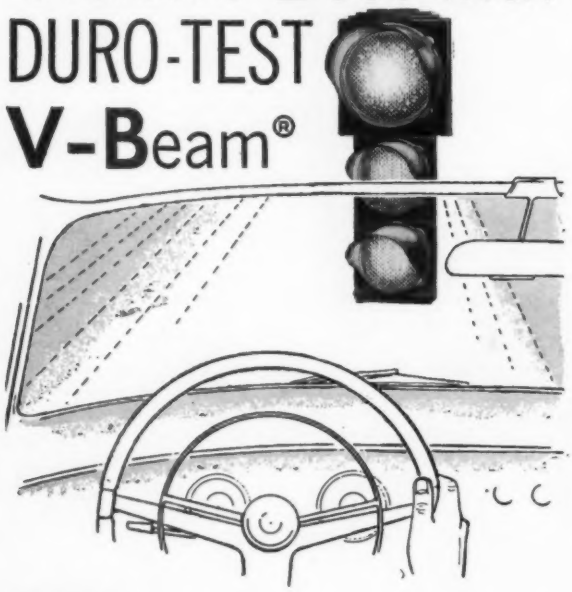
Fringe Parking In Miami

THE background on parking facilities in Miami, Fla., is that: on December 1, 1955, the City of Miami, by ordinance, created a Department of Off-Street Parking and provided for a director and citizens' board consisting of five members.

At the same time, the City Commission appropriated $1,500,000 and agreed to set aside revenue from on-street parking meters totaling $225,000 annually. This will be the basis for an open-end self-liquidating bond issue. The proceeds of this issue will be used to acquire sites for: (1) off-street garage and surface parking located at the perimeter of the central business district, so that the driver can park within two blocks of the first desired destination, without driving into the core of the area, which is already over-congested; (2) long-time or all-day fringe parking located between two and five blocks from the heart of the central business district; (3) meter customer parking located in outlying districts; and (4) park-ride lots serviced by express shuttle buses to the central business district.

Our program provides for five new garages. Some of these garages will be constructed by private enter-

Vision's Best with DURO-TEST V-Beam®



NEW 150w. lamp fits 8′ and 12′ signals

Reduce traffic accidents with the brilliant 150 watt Duro-Test V-Beam—the longer burning, economical lamp that increases highway safety and decreases maintenance costs. Its uniquely-shaped filament outshines the glare of bright sunlight as well as confusing electric signs at night. Brighter V-Beam is the only long life traffic lamp that meets or exceeds I.T.E. beam intensity standards. See for yourself why Vision's Best with Duro-Test V-Beam.

© 1956 Duro-Test Corp.

DURO-TEST Corporation

NORTH BERGEN • NEW JERSEY

*WAREHOUSES IN PRINCIPAL CITIES FOR PROMPT SHIPMENT

prise, by special arrangements with the city, and, where that is not possible, the city will put up its own garages.

This program is already in progress, land is being condemned and garage plans are completed. The land has already been acquired, paved, and metered, and is presently being used for off-street parking in two of Miami's outlying business districts, and one large park-ride lot is in operation.

WILLIAM L. PALLOT, *Chairman*
Off-Street Parking Department
City of Miami, Fla.

Deaths 2:1 on Wet Pavements

IN releasing accident statistics for the first 45 days of 1956, New York City's Police Commissioner Stephen P. Kennedy pointed out that the death rate is twice as high on rainy days. This year on an average rainy day there was a 100% increase in deaths, a 17.7% rise in injuries, and a 23.6% jump in accidents.

On the 16 rainy days from January 1 to February 14, there were 33 persons killed and 1,814 injured in 1,417 accidents. On the 29 clear days there were 34 killed and 2,785 injured in 2,085 accidents.

The Commissioner urged motorists to avoid speeding, drive slowly, and be especially watchful for pedestrians. He urged pedestrians also to be extra cautious and to obey traffic signals in crossing streets during rainy weather.

Transporting More People

TWO factors seem largely to account for the glaring lack of progress in our over-all urban transportation services. First, passenger carrying services—have been a scatter of uncoordinated operations; hampered by local, state, and federal franchise and regulatory mill stones; and old, crowded, slow vehicles operating in city traffic.

Another reason for this deficient progress is the parking problem. The manager of a large merchandising operation recently told me they have 25% more parking area than business floor area, and on peak days they do not allow employees to use this parking space because they need it all for their customers. Thus, the parking problem alone prohibits—both physically and financially—serving highly developed areas solely with private autos.

Emphasis upon volume travel via private auto into our downtown areas, through construction of automotive freeways without concerted attention to our much more efficient public carriers, is only making our "parking scarcity" and "street congestion" dilemmas worse.

A lane of buses, trolley coaches, or street cars will carry as many people as 5 to 7 lanes of autos on regular city streets. One 2-track rapid transit rail line will carry as many people as seven 6-lane limited access expressways. The rapid transit service under Lexington Avenue, in New York City, would require an expanse of expressways one-half-mile wide to move the same number of people into the city—and where could such a sea of automobiles be parked?

We should encourage use of the private auto in non-

YOU BUY

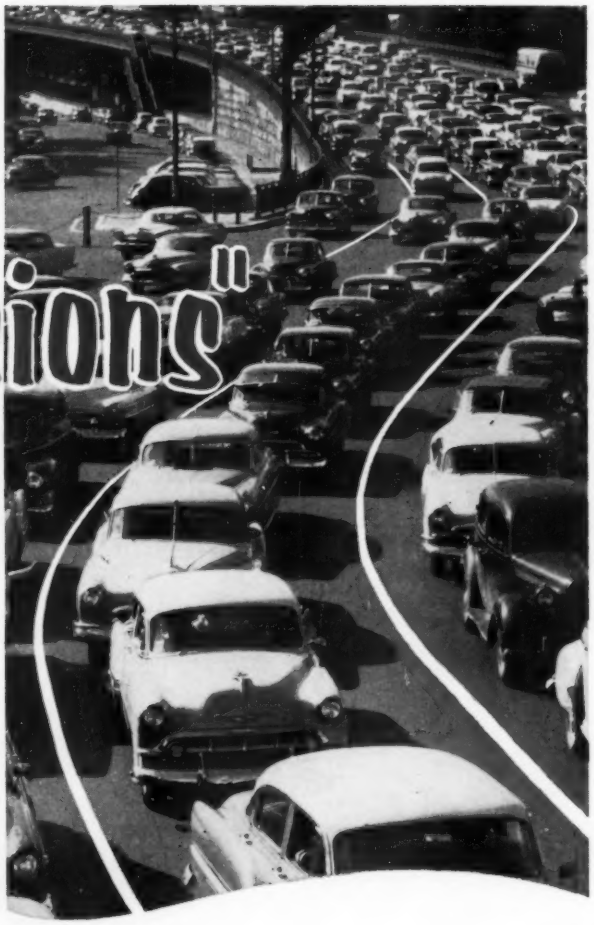
Simplicity

When you buy
Advanced Design
AMERICAN METERS

American Meters are noted for their simplicity of design. This model consists of a simple, water-proof register box, a disc and chamber unit, frost bottom and gear train. Each of these is easy to disassemble or assemble. Fewer parts permit more rugged parts resulting in trouble-free operation year after year. Simplicity of design reduces parts inventory and lowers maintenance costs. If you are looking for meter simplicity, extreme accuracy and dependability . . . Buy American.

BUFFALO METER CO.
2902 Main Street, Buffalo 14, N. Y.

Put Rhythm in your "Jam Sessions" with lane markings of PRISMO MUNICIPAL *Life Line*



Rush hour traffic holds fewer terrors for traffic engineers, police and ordinary citizens alike when your streets are lane-divided with Prismo Municipal LifeLine. Traffic flow speeds up and becomes smoother even at peak periods. City Fathers approve the low cost feature of Municipal LifeLine, too.

Easy to put down, a small crew can stripe miles of streets in a few hours.

Quick drying, it causes the least possible interference with traffic while being applied.

Long lasting, it holds to a minimum the need for repainting.

Write today for information on Prismo Municipal LifeLine and *Super* Municipal LifeLine.

Prismo Plastix and Plastix Legends—an extruded thermoplastic impregnated with highly refractive glass spheres—is a permanent type traffic marking material answering many needs of municipalities. Write for Prismo Bulletin PX-53.

PRISMO

SAFETY CORPORATION
HUNTINGDON • PENNSYLVANIA

congested areas and provide abundant, convenient parking at outlying transit stations so the person who does not need the car downtown will find the combination of auto and public transportation travel fastest, most convenient, most comfortable, safest, and least costly.

Our continually rising standard of living means that more and more people have automobiles at their disposal and hence can choose between private and public transportation. Generally they select the fastest, most convenient, and most comfortable mode. Our job then is to provide volume public transportation service—including parking at outlying stations—of such a quality that sufficient "preference" drivers will be attracted to substantially eliminate the traffic congestion and parking problem in our highly developed downtown areas.

The combination of outlying station parking and rapid transit service from Shaker Heights into downtown Cleveland is a good example. The Congress Street expressway center mall rapid transit project in Chicago is another one in the making.

It is worthy of special attention because of the relatively low cost development of new private right-of-way for fast public transportation. By co-ordinating the center mall rapid transit right-of-way development with the expressway a most important high-speed route west out of the Chicago loop is being obtained for about one-fiftieth the cost of a subway. The carrying capacity of the expressway is being multiplied many times for less than a 10% addition to the total cost of the expressway.

EARL E. KEARNS
General Electric Company, Erie, Pa.

Extensive City Transportation Study

SEVEN cities have been selected by the National Committee on Urban Transportation, Washington D. C., for field-testing of new procedures aimed at helping solve the ever-growing traffic and transportation problem in urban areas. The pilot study cities are Detroit, Mich.; San Diego, Calif.; Phoenix, Ariz.; Syracuse, N. Y.; Oak Park, Ill.; Albuquerque, N. M.; Crawfordsville, Ind.

The objective of the National Committee is the publication of a manual to provide public officials with methods and procedures for the systematic collection of facts about all aspects of a city's transportation system. When measured against the yardstick provided in the manual, it should be possible for a city or local government to:

1. Determine transportation deficiencies.
2. Evaluate the soundness of existing urban transportation policies and practices.
3. Develop realistic plans and programs to improve urban transportation service and to provide for proper integration of all forms of transportation.
4. Present legislative bodies and the public, needs based on accurate factual data.

Each pilot study is expected to take from a few months to a year to complete, depending on the size of the city involved. At the conclusion of all of the studies, the techniques of the manual will be reviewed and, where necessary, revised. Then the document will be published.

Prompt Look at Accidents

A NEW Accident Investigation Squad aiding the New York City Police Department traffic enforcement program, consists of six units.

The Squad's six radio patrol cars, manned by patrolmen in uniform go to the scene of all motor vehicle accidents in which persons are killed or seriously injured and likely to die, and make an investigation into the cause of each accident.

When the investigation indicates culpable negligence by reason of intoxication, reckless driving, leaving the scene of an accident, operating a stolen vehicle, excessive speed, or joy riding, the assistant district attorney of the Borough is consulted by the Homicide Squad and with his approval a summary arrest will be effected. When the accident appears to be the result of mechanical failure or evidence of culpability is conflicting, the facts are given to the district attorney and later presented in court.

In addition to their accident investigation duties, the teams, while on patrol, concentrate on enforcement of traffic violations which are the most common cause of accidents.

Valley Stream's Many Parking Areas

THREE classes of parkers have been rather consistently supplied with space by the Village of Valley Stream, Long Island, New York. First the whole conglomeration of parkers was served by the installation of close to 1,500 Magee-Hale Park-O-Meters. The three specific classes of parkers provided for by the village are the commuters, the shoppers, and the business people and their employees.

The severity of the commuters' parking problem is indicated by there being some 3,000 to 3,500 commuters. It is mitigated to some extent by the availability of three Long Island Rail Road stations. Two are within the village limits, and the third station is just 50 feet over the city line.

There is a parking lot at the last named (Westwood) station and a lot with a capacity for 150 commuters at Gibson station and one for 250 commuters at the Valley Stream station and another under construction at this same station.

Across the street from the Valley Stream station there

Clearing a 50-car parking field in Valley Stream, N. Y., with a Caterpillar tractor equipped with bulldozer.

New! The Sherman Major Power Digger

with Many Advanced Features to Increase Versatility and Earning Power

The all new Sherman Major Power Digger has been engineered to take full advantage of the ruggedness and economy of the Fordson Major Diesel Tractor. This heavy-duty unit will dig 12 feet below grade, reach 18 feet 3 inches behind the tractor rear axle, dig throughout a swing arc of 180° and will carry a full bucket to a height of 8 feet 8 inches for loading trucks.

Additional features of the new Sherman Major Power Digger include twin crowd cylinders, heavy steel plate construction, large diameter hinge pins, heavy steel castings, replaceable hardened steel bearings at hinge points, and a newly designed dipstick, boom, cylinders, bucket and sub-frame assembly.

Write for bulletin No. 1041

See the Sherman
Major Power Digger soon
at your local
FORD TRACTOR DEALER

Sherman
PRODUCTS, INC.
ROYAL OAK, MICHIGAN
POWER DIGGERS* • FRONT END LOADERS • FORK LIFTS
Sherman SP Products

*Designed, Engineered and Manufactured jointly by Sherman Products, Inc., Royal Oak, Michigan. Wain-Roy Corporation, Hubbardston, Mass.

©1956 Sherman Products, Inc.

LIVE-BOOM DERRICK RISES TO THE OCCASION

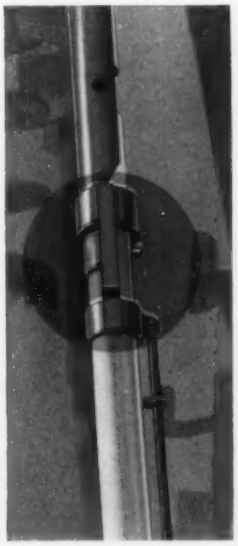
This 5700 Series Holan derrick literally rises to the job at hand. In a matter of seconds, smooth hydraulic power brings the derrick from out-of-the-way overhead storage into working position.

The derrick lifts poles 55 feet long, has an infinite number of lifting positions and gives live-boom action even with a single-drum winch. Its capacity: 6000 pounds . . . 2000 pounds for loading into the truck body.

To keep the derrick rigid, you can specify pin locking or Holan's exclusive hydraulic sleeve locking . . . completely automatic coupling of the side legs. Write for catalog on Series 5700 Power Derrick.

PIN-LOCK TYPE

Unique pin arrangement requires established sequence for locking the derrick. You can't pull out the wrong pin.



SLEEVE-LOCK TYPE

Operator pushes control lever and sleeve slides upward to lock derrick. Stop pins prevent the sleeve from accidentally disengaging.

Line construction bodies for light to heavy-duty. Crew compartments optional. Efficient tool compartments and drawers.

Aerial arm for spotting workmen 37 feet above ground, 9 feet below ground level. Rotates 360°.

Service bodies for chassis up to 1½ ton. Lengths, 72", 75", 84", 90" and 102".

Hydraulic Derricks designed for front or rear mounting. Capacities to 12,000 lbs.

Light-duty power operated derricks for front or rear mounting. Operating range of 146°.

Ladders to 40' with all phases completely hydraulic. Pump actuated by P.T.O. or separate engine drive with electric starter.

Mechanical Ladders expertly engineered and counterbalanced for effortless handling. Maximum heights from 23' to 40'. Swings 360°; angles to 72°.

Portable hydraulic and mechanical earth borers. Augers for 8" to 20" diameters, depth to 8'.

Wide variety of pole and reel trailers. Standard and special. Many optional features.

Hydraulic jacks, controlled from rear of truck. Rigid mounted or patented Holan self-stowing types.

Hydraulic towers with rotary, stationary, or transverse platforms. Exclusive box-girder telescoping mast.

J.H. HOLAN® CORPORATION

4100 WEST 150TH STREET
CLEVELAND 11, OHIO

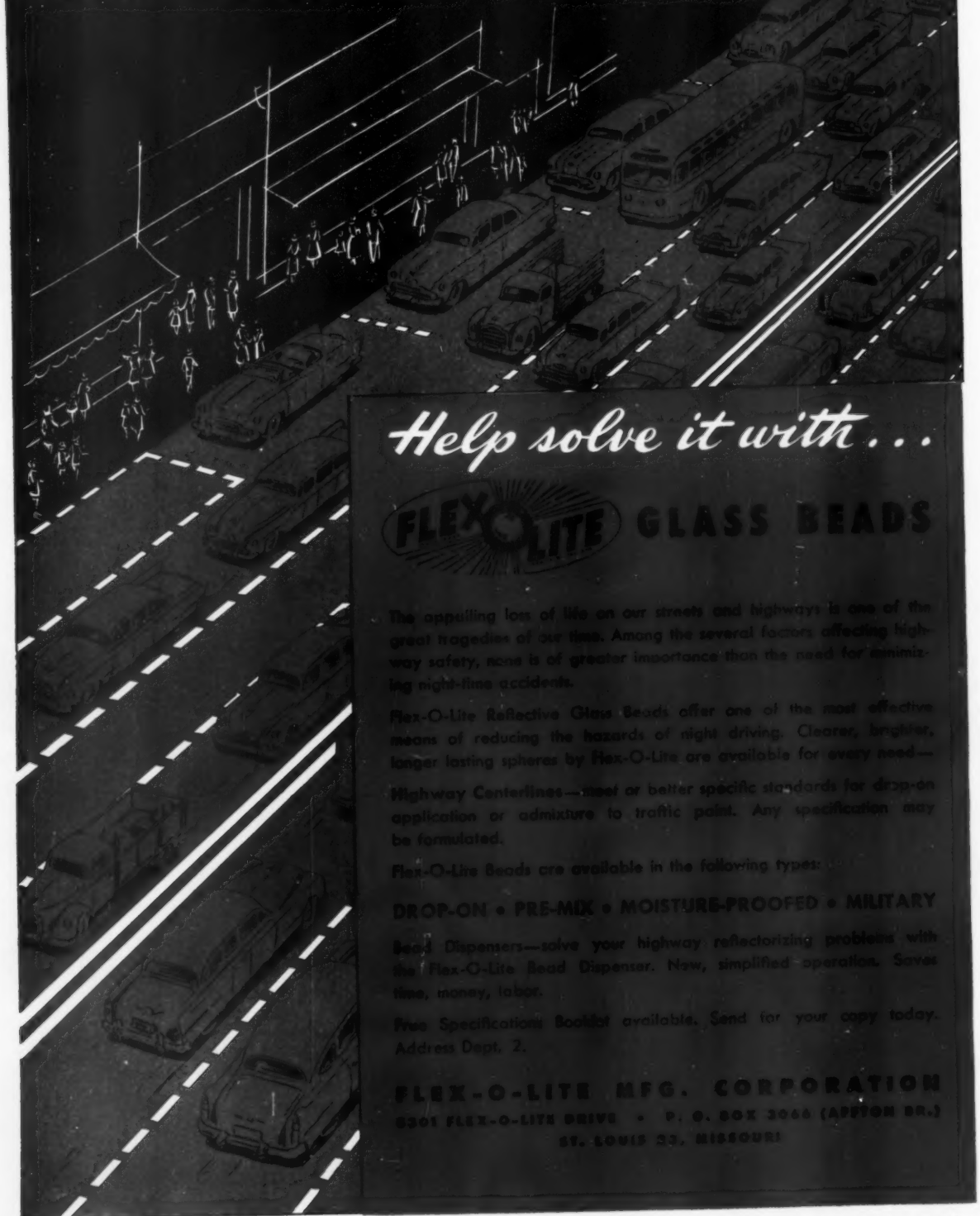
OTHER PLANTS:

HOLAN CORPORATION OF GEORGIA, Griffin, Ga. • J. H. HOLAN CORP., Phoenix Div., Arizona
BRANTFORD-HOLAN LIMITED, Brantford, Ontario

THE NAME THAT MEANS WORK SIMPLIFICATION

TRAFFIC SAFETY

America's No. 1 Problem...



Help solve it with...

FLEX-O-LITE GLASS BEADS

The appalling loss of life on our streets and highways is one of the great tragedies of our time. Among the several factors affecting highway safety, none is of greater importance than the need for minimizing night-time accidents.

Flex-O-Lite Reflective Glass Beads offer one of the most effective means of reducing the hazards of night driving. Clearer, brighter, longer lasting spheres by Flex-O-Lite are available for every need—

Highway Centerlines—meet or better specific standards for drop-on application or admixture to traffic paint. Any specification may be formulated.

Flex-O-Lite Beads are available in the following types:

DROP-ON • PRE-MIX • MOISTURE-PROOFED • MILITARY

Bead Dispensers—solve your highway reflectorizing problems with the Flex-O-Lite Bead Dispenser. New, simplified operation. Saves time, money, labor.

Free Specifications Booklet available. Send for your copy today. Address Dept. 2.

FLEX-O-LITE MFG. CORPORATION

8301 FLEX-O-LITE DRIVE • P. O. BOX 3044 (ADEVON BR.)
ST. LOUIS 23, MISSOURI

is a 200-car parking lot for visitors whose cars do not bear village stickers. This lot is metered at 25 cents for 12 hours.

At the rear of stores and on side streets along Rockaway Avenue are 16 parking fields for shoppers, and 4 additional fields are under construction. These include the one shown in the photograph, which has been cleared and awaits a time when it may be needed. The business people and their employees are served by two parking lots adjacent to Rockaway Avenue, the main street.

In recent years the westerly end of the village has been developing considerable new business and some parcels there, suitable for parking-lot development, are under consideration.

PERCY B. SPRAGUE, *Superintendent*
Public Works Department
Valley Stream, N. Y.

* * *

A SUBWAY for buses is included in Chicago's five-year-public works program outlined by Mayor Richard J. Daley. Other traffic-jam alleviators in the program are $22,000,000 for parking facilities, $60,000,000 for subways, and $320,000,000 for highways.

* * *

Pedestrians Crossing Columbus Circle

TO handle the crowds at New York City's new Coliseum, a pedestrian safety plan featuring crosswalks, pedestrian signals, and fence barriers has been installed in Columbus Circle. It is a complete revision of the signal system in Columbus Circle, and includes three-color signal heads.

Aside from alleviating vehicular traffic congestion in Columbus Circle through the new traffic movement pattern, the most serious problem—the stream of pedestrians pouring through Columbus Circle—is being constructively approached and pedestrian traffic channeled. The new plan directs pedestrians by means of signal lights, fence barricades and signs to follow a route around the Circle, instead of cutting across it.

The new installations include 12 pedestrian "WALK" and "DON'T WALK" signals. These signals, designed by Department of Traffic engineers, are sufficiently large and bright to see from comparatively longer distances. They flash "WALK" in green and the words "DON'T WALK" in red.

In addition, four signs prohibiting pedestrians from entering the Circle proper and reading "PEDESTRIANS KEEP OUT" have been placed at entrances to the Circle, two on the south side and two on the north side. A half-dozen other signs, cautioning pedestrians to follow the new pattern and reading, "PEDESTRIANS USE CROSSWALKS," have been erected at strategic points around the Circle. To complete the plan, a solid fence of steel pipe supported on heavy stanchions has been erected around the Circle to prohibit pedestrian crossings at unauthorized locations.

T. T. WILEY
Traffic Commissioner
Department of Traffic
City of New York

More Off-Street Space in Business District

BELIEVING in the need for off-street parking facilities in the central business district, the City of Berkeley, Calif., hired De Leuw, Cather & Co., San Francisco, to prepare a parking facility report covering a 10-year period. The first phase of the program consisted of the acquisition of properties for construction of two parking lots and one 5-story ramp-style parking garage.

The complete program is financed from the sale of off-street parking revenue bonds. The two series of bonds will finance the construction of the first phase of the program. The series A bonds in the amount of $650,000 will be used to finance the property acquisition for the three facilities as well as the construction of two lots. The series B bonds will finance the ramp garage and an additional parcel of land.

This off-street parking program is completely financed by these bonds. Payment of principal and interest will be made from revenues from both on and off-street parking meters, of which there are around 900 Duncan Meters on the street and 265 Magee-Hale Park-O-Meters in two parking lots.

Lot facilities 2 and 3 have been in operation since December 1955. Construction of the ramp garage has been delayed due to litigation on the one parcel of land needed for this facility.

JOHN H. NAIL
Administrative Assistant, Berkeley, Calif.

Thoughts on Mass Transit

MASS transit has come to be a stand-by service—used to full capacity for about four hours—two hours in the morning and two in the evening—five days a week, and during periods of inclement weather when people are reluctant to, or cannot, use their cars. Yet there still will always be a large population of riders for whom mass transit must be provided. These are the too young or too old to drive cars.

One obvious way to maximize use of transit, and solve the traffic problems, would be to bar unessential private cars from the congested areas of the city. Enforcement of existing parking regulations would go a long way in this direction.

An interesting innovation which may give verve to city transportation is the Houston monorail, an entirely new concept of intra-city rapid transit. Before this design had been brought to my attention I had looked with disfavor on monorail operations as I felt no technological improvements had been made during the past 50 years in such proposed developments.

Unless cities can solve their traffic and transportation problems efficiently and economically, it will become expensive to do business in them. Surface traffic in the heart of a city should be kept to a minimum. Its primary function should be to serve as a feeder to rapid transit. Stations should be on the fringe of business areas and include ample parking facilities for private cars. The motorist should park his car at such a perimeter facility and then proceed to his destination via an efficient local mass transportation system.

COLONEL S. H. BINGHAM
Consulting Engineer, New York, N. Y.

Unless you have a convenient way for citizens to pay overparking fines — without feeling "branded as a felon" — the finest metered parking control is not complete.

"We have the *complete* system"

"It takes more than parking meters to set up a control system that people will respect and approve. Experience showed us that a simple, easy method of ticketing and collecting fines is absolutely necessary. We found it—as you will—in the Traf-O-Teria System."

Write Today for Complete Information

TRAF-O-TERIA®

TRAF-O-TERIA SYSTEM • EL DORADO, KANSAS, U.S.A.

No More Exhaust Smoke In Philadelphia

IN PHILADELPHIA, smog induced by exhaust gases will be nipped in the bud by a new regulation passed February, 1956. Under its terms, no motor vehicle will be permitted to emit visible fumes, gases, smoke, vapors or mists other than water while stationery, or while in motion except for the first 100 yards after starting.

The regulation also provides that persons maintaining or operating motor vehicles for commercial purposes shall conduct periodic visual and odor tests of motor exhausts. Motors must be maintained and drivers should be instructed along lines that minimize air pollution.

The regulation is enforced by the city's Air Pollution Control Section. Raymond Smith, chief of the section, will supply copies of the ordinance to cities interested.

Single-Stage Today, Two-Stage Tomorrow

(Continued from page 133)

for this purpose. To make the enclosure more rigid, 2- by 2- by ¼-inch angles were used on the bottom edge and 1½- by 1½- by 1¼ inch angles were fastened to the top edge of the Armco sheets. Corrugated sheets have proved adaptable for this type of service in similar installations at San Mateo and Lakeport, Calif. Thus, the engineers felt justified in using such an enclosure at the Fillmore plant.

A Dorrco rotary sewage distributor applies sewage to the filter at a maximum rate of 4,800 gpm with a head of 3 feet measured from the water level in the center column to the top of the filter stone. Minimum flow is 2,400 gpm. Selected rock 2 inches by 3 inches in size make up the filter bed. The bed is 3-feet deep.

The city issued $250,000 in general obligation bonds to finance construction of the sewage treatment plant and trunk line sewers. Other sewer lines and laterals were paid for out of a 425,000 special assessment levy.

The Fillmore project was constructed under the administration of Robert Linvill, mayor; and Leon Harthorn, city manager. Bennett Engineering Company designed the project. Henry N. Jenks and John H. Jenks, Sanitary Engineers of Palo Alto, were the consultants and the writer supervised construction. Wesley Nichols is in charge of the plant.

The Sanitary Landfill—Part III: Method and Operation

(Continued from page 136)

be drained, filled, or treated with effective chemicals to prevent mosquito production and allay disagreeable odors.

(l) Where necessary, effective steps should be taken to prevent waste material from floating into open water.

(m) Inspection for and control of rodents should be maintained until fills are stabilized.

(n) After the active period of the filling operations is completed, a maintenance program should be continued until the fill has become stabilized, to insure prompt repair of cracks, depressions, and erosion of the surface and side slopes.

It has been indicated by experience that:

1. Where practical, compaction of refuse should be done in stages of shallow layers of about 12 inches in compacted thickness.
2. A deposit of about 6 inches to 1-foot of earth cover on the operating face over each day's deposit of refuse, topped with 24 inches when a trench or similar operating area is completed, has proven satisfactory.
3. Trenches should be constructed at least one and one-half times the width of the tractor and its equipment.
4. Large quantities of tree trimmings, logs, stumps, and similar material, should be burned at an appropriate time on a site not immediately akin to the operating area. Small quantities of such material may be successfully incorporated into the fill by placing it in the bottom of the trench or area being filled.
5. A structure or house, preferably portable, is desirable for use by personnel and for storage of tools and maintenance of equipment. Appropriate sanitary facilities should be provided.

Small-Community Operation[5]

With proper planning and efficient operation, small communities of 5,000 or less still should be able to operate a sanitary landfill effectively. On a project of this size, the tractor will be required only two or three hours daily (or for that matter on alternate days when alternate day collection is practiced), and thus is available the rest of the time for other municipal operations, such as gravel loading, snow removal, or street excavation. This arrangement would necessitate regulated dumping hours at the landfill site to prevent refuse from being scattered about during off days, evenings, and weekends.

Smaller communities might modify the landfill method by a form of sanitary trenching. It would usually be necessary to clean up the site before excavating a trench. Since the accumulation on small dumps can generally be moved only with heavy equipment, the trench may have to be excavated by rented equipment. The refuse should be compacted and covered at least twice a week in warm weather, and as often as practicable in the winter.

If heavy equipment cannot be obtained, an ordinary farm tractor and a small, front-end loading bucket or bulldozer blade can be used after such large items as tree limbs, car fenders, and barrels have been removed. Signs may be placed designating a separate dumping trench or area for such large objects. It would not be possible to control fires completely, but a deliberate program of burning household refuse is not recommended in this modified version

A Cook Well Strainer filters the impurities from 2,000 GPM of "raw" Gulf water continuously circulating through the huge, 500,000 gal. main tank at Gulf Exhibition Corp's., "The Living Sea", live sea-life exhibition place at Ft. Walton Beach, Florida.

clears the sea for world's only Gulfarium

A 10-inch length of Cook 16" (O.D.), Red Brass, Wire-wound Strainer is used because Cook's exclusive V-shaped, self-cleaning, non-clogging slot assures maximum flow over longer years. "It's even surpassed estimates of your own engineers" says Gulf Exhibition Corporation.

Wire-wound and brass-tube strainers are available in slot sizes .006" to .25", fabricated from Red Brass, American Everdur Bronze, Armco Iron or Stainless Steel.

Photo shows section of Cook 16" (O.D.), Red Brass, Wire-wound Cook Well Strainer, with No. 16 slot and 12" standard brass flange used in this operation.

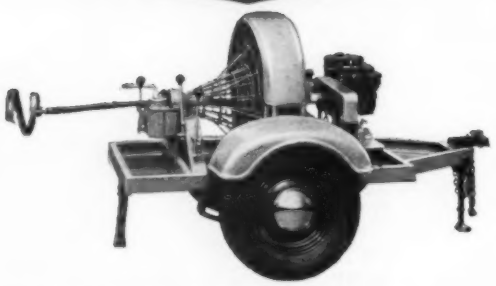
Eight to 24-hour delivery often possible. Phone Cincinnati MUlberry 1-1800, or write for details.

COOK WELL STRAINER CO.
3264 BEEKMAN, CINCINNATI 23, OHIO
World's Leading Name in Well Strainers

CLEAN SEWERS BETTER, CHEAPER...

WITH O'Brien sewerking®

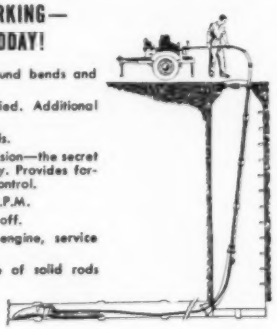
POWER CABLE-RODDER



LOW FIRST COST—TIME-SAVING—ONLY 1 or 2 OPERATORS . . . these are the *budget* reasons for cleaning sewers with the O'BRIEN SEWERKING! The reason for this efficiency is that SEWERKING uses heavy, flexible steel cable—handles it *by power!* The continuous cable, with cutting tool attached, is projected into the sewer *by power*—rotated for cutting *by power*—retrieved and coiled in the storage drum *by power!* There is simply no comparison in job time and man hours saved in contrast with the use of cumbersome solid rods!

INVESTIGATE SEWERKING—MAIL COUPON TODAY!

- Flexible cable reaches around bends and traps.
- 250 feet of cable supplied. Additional amounts easily connected.
- Complete line of cutting tools.
- Exclusive OB power transmission—the secret of handling cable efficiently. Provides forward, reverse and neutral control.
- Rotating speeds—75-175 R.P.M.
- Throw-out clutch—for on or off.
- Super powered gasoline engine, service guaranteed.
- Adapter available for use of solid rods when desired.



O'Brien sewerking®

FREE CATALOG! Mail coupon today for complete information. NO OBLIGATION!

O'BRIEN MANUFACTURING CO. • CHICAGO 30, ILLINOIS

• Send us literature on SEWERKING, without obligation.

NAME OF CITY _____ STATE _____

STREET ADDRESS _____

SIGNED BY _____

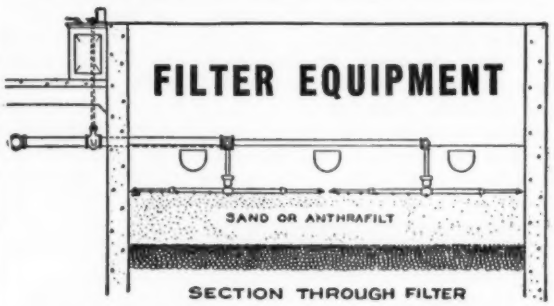
TITLE _____ DATE _____

AC-556

Mail to: O'BRIEN MANUFACTURING COMPANY

3444 Northwest Highway • Chicago 30, Illinois

PALMER



SECTION THROUGH FILTER

Filter Bed Agitator Advantages

Requires an average of 40% less wash water

Eliminates mud balls

Prevents cracking and shrinking of the beds

Produces "new" sand after short period of normal operation

Enables you to increase filter runs up to 50%

Anthrafilt Advantages

Doubles the length of filter runs attainable with sand and quartz media

Requires one-half as much wash water

Filters are out of service less because of the shorter wash cycle

Coating, caking or balling with mud, lime, iron or manganese reduced to the minimum

Write for Circular

PALMER FILTER EQUIPMENT CO.

P. O. BOX 1655, ERIE, PA.

IF

ONE OF YOUR PROBLEMS IS

INSECT CONTROL

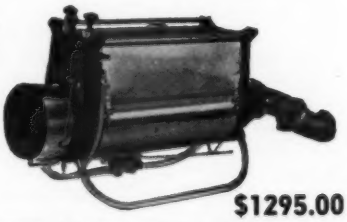
. . . THIS SHOULD INTEREST YOU!

. . . an insecticidal fog generator that—

- Outsells all other types in Florida and Texas
- Is in regular use at U. S. Air Force Bases
- Weighs just 100 lbs., yet does work of much heavier machines.

DYNA-FOG®

Simple to use . . .
Potently effective . . .
Widely sold . . .
Dyna-Fog merits your *investigation.*



$1295.00

EXTRA!

Our "Machine Loan" Program provides "sub" unit, should yours ever be out of action for servicing.

NOTE: Ask about our 19 lb. Dyna-Fog Jr. for that specific insecticidal fogging job.

Write for Complete Information!

Curtis AUTOMOTIVE DEVICES, INC.
Dyna Products Division

P.O. Box 232-B
Bedford, Indiana

of a community's sanitary landfill.

A simple outline of a program for a small community is:

(1) Tell the public how, why, and what you are going to do.

(2) Clean up the old dump and build an all-weather road to the site using rented, heavy equipment if necessary.

(3) Dig a trench, store dirt at ends or on sides, and designate a specific area for large objects.

(4) Work over refuse in the trench. Cover the top and face with at least 2 feet of dirt on the schedule mentioned.

(5) Each spring incorporate the large objects into the fill, burn the accumulated brush, and dig a new trench.

Sanitary trenching, while less desirable than a sanitary landfill, is a vast improvement over the usual small open dump.

Economics

Experience has shown that a sanitary landfill can be operated at a cost of between 50 cents to about $1.50 per ton of refuse handled. A representative cost figure should include cost of land, equipment, depreciation, labor, operational expenses, and miscellaneous contingencies.

Some representative cost figures are listed below:

San Francisco[7] spends 90 to 95 cents per ton of refuse handled. This fill is operated by a private contractor and, therefore, this reported contract cost can be assumed to include all costs of disposal, plus a reasonable return for disposal of material delivered to the fill site.

California cities reported on by the University of California Sanitary Research Project (Berkeley, Fresno, Lodi, Groville, Palo Alto, Riverside, Stockton)[8] ranged from 31 cents to $1.57 per ton, averaging 81 cents per ton of refuse.

Mandan, N. D.[4] A study by the Public Health Service and the North Dakota State Department of Health reported a cost of $1.35 per ton when equipment and operator (which were needed for actual operation of the fill site only one-half day) were not utilized for other municipal projects. Cost was reduced to 76 cents per ton when equipment and operator were used part-time on other municipal projects.

Winnetka, Ill.[9] A report by the Superintendent of Public Works of the village indicated a cost of 72 cents per ton.

Ohio cities, reported by the State Department of Health,[10] in 1951, has an average sanitary landfill cost in

THE GREATER, MORE DEPENDABLE LIGHT OF

amplex

Mercury Vapor Lamps

IS A PROVED DETERRENT TO

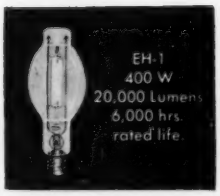
CRIME

TRAFFIC ACCIDENTS

PEDESTRIAN INJURIES

YOU GET

TWICE AS MUCH light for wattage consumed • Burning life several times longer than incandescents • 6,000 HOUR GUARANTEE!



For full information on AMPLEX street lighting and traffic signal lamps, write to **Amplex Corporation, Dept. AC-556, 111 Water St., Brooklyn 1, N. Y.**

ROAD TO REDUCED STRIPING COSTS

Get These Benefits with CATALINE *Reflective* Pavement Marking

- 50% longer life than ordinary traffic paints
- "No-track" in six minutes —dry in 20 minutes
- Meets all specifications
- Easy application with standard striping equipment
- Premixed or Drop-on, as you prefer
- Weather and wear resistant
- Brilliant reflection by night —bright marking by day
- Reflectorizing beads made of high grade optical crown glass

Write today for catalog 5AP

Cataphote CORPORATION

Toledo 10, Ohio and Jackson, Miss.

Reflective Traffic Products:
- CATAFLEX SIGN KITS
- CATAPHOTE TRAFFIC SIGNS
- CATALINE REFLECTIVE STRIPING
- CATAPHOTE REFLECTIVE BEADS

cities of 25,000 to 100,000 population, 55 cents per ton; cities of 10,000 to 25,000 population, 83 cents per ton.

References

1. **Sanitary Fill Standards,** State of Idaho Division of Environmental Sanitation, Department of Public Health, Boise, Idaho.
2. **Notes on the Sanitary Landfill Method of Garbage and Refuse Disposal,** Caterpillar Tractor Company, Peoria, Ill.
3. **Defender of Community Health,** sanitary fill costs and operational data, Drott Manufacturing Corporation, Millwaukee, Wis.
4. **An Analysis of Sanitary Fill Operations,** American Public Works Association, Special Report No. 2, Chicago, Ill., 1948.
5. **The Sanitary Landfill in Northern States, 1952,** L. Weaver and D. Keagy, PHS Publication No. 226, U. S. Government Printing Office, Washington 25, D. C., 25 cents.
6. **Bismarck Sanitary Landfilll — Progress Report,** E. J. Booth, Official Bulletin, North Dakota Water and Sewage Works Conference, Dec. 1951-Jan. 1952.
7. "Sanitary Fill Economics," W. S. Foster, **The American City,** March 1953.
8. **An Analysis of Refuse Collection and Sanitary Landfill Disposal,** University of California Sanitary Engineering Research Project, Technical Bulletin No. 8, Dec. 1952.
9. **Sanitary Fill Operation for 1948, Winnetka, Illinois,** R. L. Anderson, a report.
10. **Summary Report on Municipal Garbage and Refuse Conditions, 1950-51,** Ohio Department of Health, Columbus 15, Ohio.

Municipally Owned Gas Systems Grow in the South

THE southern States, particularly those of Alabama, Georgia, and Tennessee, have been making municipal history during the past few years by building gas systems as a city-owned utility. The growth has been sparked by the introduction of natural gas lines through the area. The smaller cities, whose loads have not been large enough to interest private utilities to build systems for them, apparently are determined not to let size deny them the use of this convenient fuel. Consequently, they have taken on the task of building these gas systems as a municipal service. The great advantages of natural gas, its low cost, cleanliness, uniformity of heating, and flexibility of application, all have understandably great appeal.

Anyone trying to keep up with the municipal gas systems in the South had his hands full. In Georgia alone, the list would run somewhat as follows:

City	Population
Americus	12,000
Cairo	6,000
Cartersville	7,500
Dalton	16,000
Dawson	4,500
Lafayette	5,000
Moultrie	12,000
Pelham	4,500
Sparta	2,000
Summerville	4,000
Thomasville	15,000
Trion	3,100
Vienna	2,000

In certain areas, groups of cities have formed districts that are designed to supply this service. One of these is the Northwest Alabama Natural Gas District that currently serves the Alabama cities of Bear Creek, Guin, Hackleburg, Haleyville, Hamilton, Sulligent, and Winfield. Currently, more cities near the district are petitioning to join.

Many of the gas systems have been built using cast iron for mains. However, a portion of the newer systems are switching to protected steel pipe supplied in long, easily handled lengths, all welded. In almost every case, the gas utilities prefer billing their customers monthly, rather than quarterly. Billing, however, can be combined conveniently with other municipal utility work such as water, refuse, sewerage, and, where applicable, electricity. Thus, even a small city can afford an efficient, automatic machine bookkeeping system.

Most of these cities solidly approve President Eisenhower's veto of the controversial Fulbright natural gas bill. They argue that competition between companies actually is not great, and that the contract price for gas at the well head very often contains extra clauses that would permit it to be raised to the going price elsewhere in the area. Moreover, they point out that the high capitalized cost of a pipeline virtually eliminated the opportunity for competition, once the line is connected to its well.

These gas utilities evidently have not yet won as much confidence of bond buyers as has water or electric utilities. The small systems often have to pay as much as 5% interest. This should make them an intriguing investment in view of their tax-free status.

Lowest Cost in Its Class!
...for those hundred and one jobs...all around town!

You can boost your work schedules—and give your budget a real break—with the low-priced Oliver OC-3. This great, little all-purpose tractor keeps busy on municipal assignments the year around... handling an amazing number of different jobs easily, at low cost.

Equipped with hydraulic loader, you're ready to take on the toughest jobs in town—every day in the week! You can dig, load, lift, bulldoze, backfill. Or for all those special jobs that come up, there are other handy attachments such as lifting fork, snow plow, logging tongs, etc.

Add the jet trencher (you can attach or detach it in only 90 seconds!) and you're set for almost any task connected with service line work. You can dig to 12-ft. depth, swing your boom a full 180° to dump or load to either side.

The OC-3 is about the easiest-to-operate machine you'll ever know. The average man becomes expert in a matter of hours. This and its surprisingly low cost make the OC-3 tractor combination a real favorite with municipalities everywhere. Ask your Oliver distributor to demonstrate. Or write for literature.

With bucket capacity of ½ yd., the OC-3 makes fast, low-cost work of loading operations with high lift and full bucket rotation for easy dumping.

Low-cost garbage and rubbish disposal makes the OC-3 a real favorite with small communities everywhere. Modern sanitary landfill methods are described in Bulletin A-1028. Ask for your copy.

THE OLIVER CORPORATION
400 West Madison Street, Chicago 6, Illinois

OLIVER

a complete line of industrial wheel and crawler tractors and matched allied equipment

Westinghouse fluorescent luminaires' exclusive features speed installation and maintenance

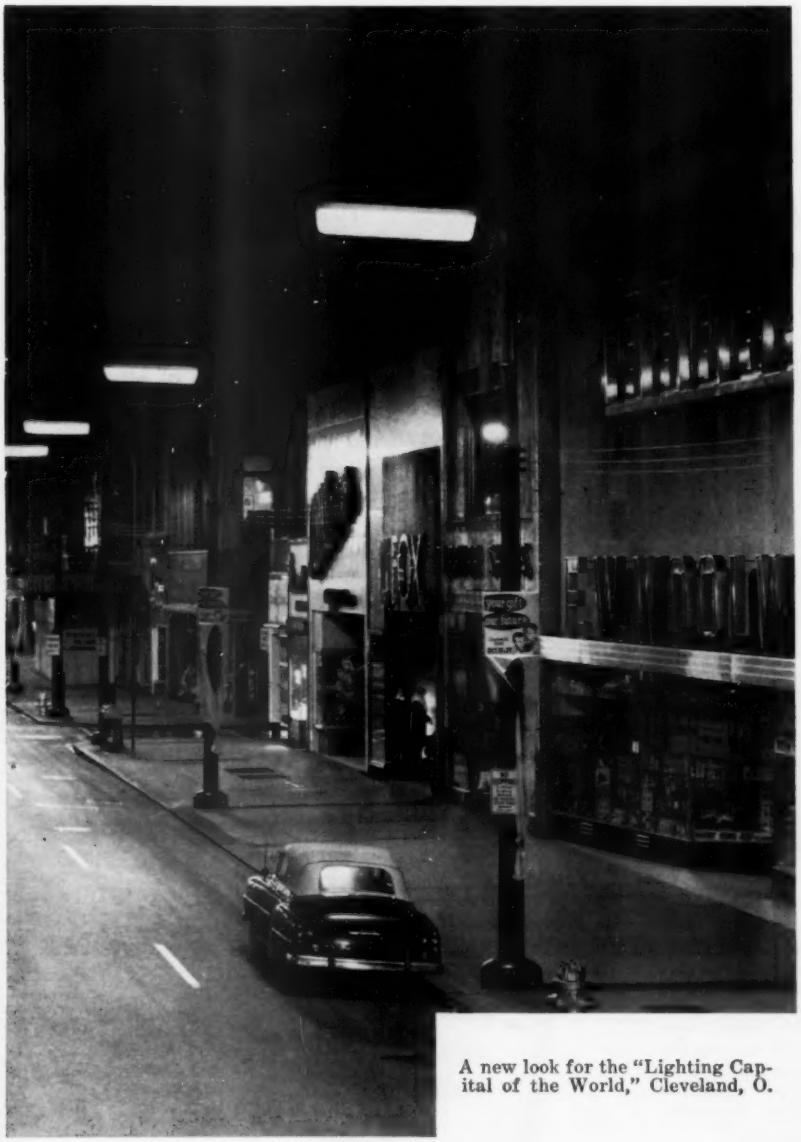
Look what's new in Cleveland! A great white way of fluorescent light by Westinghouse 4FSL-72 street lighting luminaires. The change from the old system to the new was made in record time because Westinghouse units are designed for quick installation and simple maintenance. The importance of these advantages can be measured in real savings—savings in labor cost during installation and for the maintenance life of your street lighting system.

If you are planning a fluorescent street lighting program, examine these important features, and you will agree that the Westinghouse 4FSL-72 fluorescent luminaire is built for a lifetime of efficient, economical operation.

More information? See your nearby Westinghouse representative, or write Westinghouse Electric Corporation, Lighting Division, Edgewater Park, Cleveland, Ohio. J-04390

WATCH WESTINGHOUSE

where ***BIG*** *things are happening for* ***YOU***



A new look for the "Lighting Capital of the World," Cleveland, O.

Attaching luminaire to pole . . . is done by tightening four bolts on the heavy-duty mounting bracket. 4FSL-72 may be mounted horizontally or at a 15°-30° angle for wider light distribution.

Connecting wiring . . . three knurled nuts are loosened *without tools*, allowing reflector to hinge down for easy access to ballast and wiring. Wire is brought through watertight bushing; leads are then attached to terminal block.

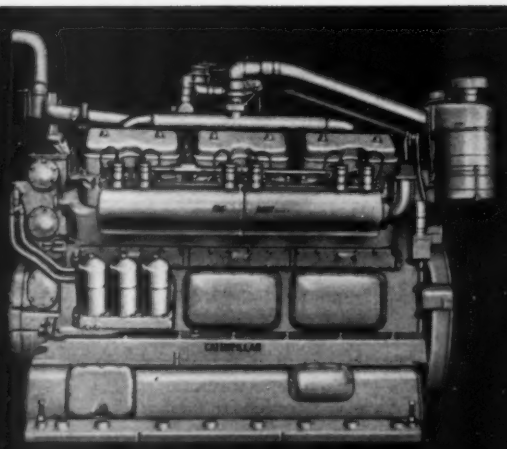
Closing luminaire after installation . . . cover may be opened or closed from either side by releasing three pressure latches. Cover is clear acrylic plastic which will not discolor with age. Fiber glass housing *never* requires painting.

Announcing 2 CAT* Spark Ignited Engines

D397
400 HP
@ 1200 RPM

D375
267 HP
@ 1200 RPM

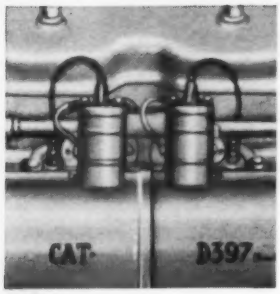
10:1 COMPRESSION RATIO for economical operation
SPARK COIL AT EACH CYLINDER for hotter spark, greater efficiency
LOW-TENSION MAGNETO for long, trouble-free life
MODERN HEAVY-DUTY DESIGN
PLUS OTHER ADVANCE-DESIGN FEATURES!



THE CATERPILLAR D397 SPARK IGNITED ENGINE

Developed to set new standards of efficiency and economy using low-cost natural gas, the D397 and D375 Spark Ignited Engines are the most recent additions to Caterpillar's line-up of modern, heavy-duty units. Wherever you put them to work, you can count on maximum performance with minimum maintenance. Conversion units are also available for diesels. Your Caterpillar Dealer, who backs you with prompt service anywhere and any time, will be glad to give you complete facts about this new power pair. See him today!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



A separate spark coil for each cylinder, featured in both the D397 and D375, provides a hotter spark for greater efficiency and permits the use of a low-tension magneto for long, trouble-free life. Advance-design features like this are the result of Caterpillar research and practical field experience—an example of Caterpillar leadership in action!

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

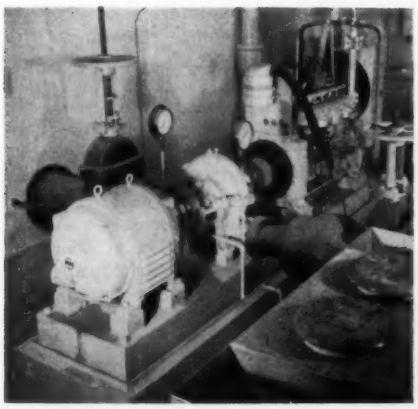
MODERN HEAVY-DUTY SPARK IGNITED ENGINES

The facilities for meter repair are compact, neat, and orderly.

A Do-Part-Yourself Program

Perrysburg, Ohio, water system emphasizes distribution excellence, relies on Toledo for water

By DONALD HAZELSWART*



An auxiliary gasoline standby engine provides standby power.

THE do-it-yourself policy is a good one, but the 5,000 people in Perrysburg, Ohio, don't believe in pushing it too far. They are willing to build their own water distribution system, supply it with pumping station, elevated tank, fire hydrants, and a complete maintenance shop and bookkeeping facilities.

But when they have to face the task of providing the water, they would rather "let George do it," in this case, George Van Dorp,* commissioner of water, Toledo, Ohio. If they had drilled a well of their own, they would have to put up with odorous, troublesome, sulphate-laden water. However, Toledo can furnish them with an ample supply of good Lake Erie water, filtered, purified, and available in a 30-inch pipe line which is located only 10 miles away.

The city assigns water supply and distribution duties to a Board of Affairs currently composed of Don Gwyn, president; Floyd Redman, and Fred Lubbon. Burton Ames is water superintendent.

To date, the Board has been instrumental in bringing two pipelines to Perrysburg. One, a 12-inch main, was financed by the county. The second, a 16-inch line, represents an investment by Perrysburg alone.

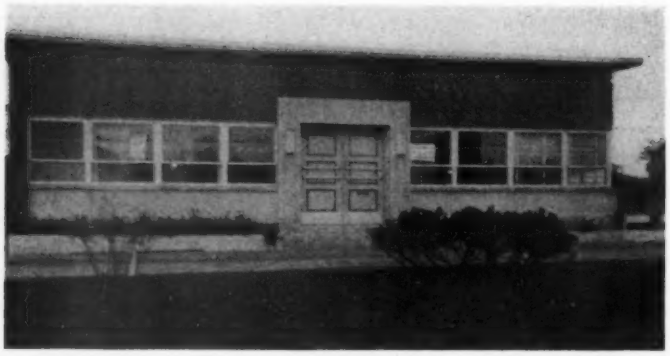
The two lines deliver water to a 500,000-gallon clear well with the input controlled by a single-acting Ross altitude valve. From here three American Well Works centrifugal pumps pick it up and boost it to the distribution system. Two are rated at 350 gpm and one at 700 gpm. The larger unit has an auxiliary 6-cylinder, Red Seal gasoline engine as a source of standby power.

Pump Station

To prevent any possibility of contamination when the water makes its trip from Toledo to Perrysburg, the city rechlorinates it at the pumping

* Now succeeded by Commissioner of Wittenburg.

* Mr. Hazelswart, as city chemist, Defiance, Ohio, has charge of his city's water treatment plant. He also writes articles about interesting nearby water and sewage installations, as his time permits.



Water facilities are centered around this neat, functional pump house.

station. A Wallace & Tiernan feeder handles this job, applying about 2 pounds of chlorine per day to maintain a residual of 1 ppm.

The pump house is a brick-and-concrete structure built in two stories, and measures 50 feet in length and 20 feet in width. The pumps have been set 10 feet below ground-level in line with the bottom of the clear well. At ground level, the building has a balcony 6 feet wide that extends around the interior of the room. This supports the small chlorinator room located near the entrance.

The scale in the chlorinator room has been installed with its platform flush with the floor, thus eliminating the need to lift the 250-pound chlorine cylinders off the floor. The room, with glass walls for easy visibility, also has a vent fan at floor level to remove any escaping chlorine gas.

The balcony also provides access to the switchgear, located on the wall opposite the entrance. The switchgear, assembled by Continental, carries controls for the elevated tank that automatically start and stop the pumps as the water level fluctuates. It also has an alarm system indicating the high and low level in the clear well, and has Minneapolis-Honeywell chart recorders and a meter that permanently records the level in the elevated tank and the pumpage to the distribution system.

Meter Maintenance

Perrysburg has a business-like do-it-yourself meter maintenance program. Superintendent Ames has located his meter shop on the lower floor with the pumps. The meter room is small, but compact and streamlined for a high degree of efficiency. Neat, varnished cabinets and bins carry replacement parts for all meters used, and a handy work bench permits the men to handle repairs comfortably.

To clean the meters, the maintenance man first wire-brushes them to remove rust and scale, then dumps them in an inhibited acid preparation to dissolve the more persistent scale. The acid crocks, when not in use, are covered with close-fitting wooden tops. The dipped meters are rinsed in three consecutive washes of clear water.

After a meter is assembled and thoroughly dry it is bronzed and tested for accuracy on a Ford Meter Box Company test bench. The department insists that all meters tested must be 99% accurate at any flow.

Meter Repair

Perrysburg has 1,870 services, all metered. The water department maintains all meters that are 2 inches in diameter or smaller and sends the larger ones to the Toledo water department to be tested and repaired. The Department has four men. On rainy or slack days, all work on meter maintenance. Superintendent Ames has not yet established a schedule of meter replacement, but removes them whenever his men feel that they are inaccurate.

Originally, those receiving the water owned their meters. However, on November 1952, the municipality started proceedings to take possession of all those 1-inch in size or smaller. At present, about 60% of the owners have turned their meters over to the Department. The larger meters still belong to the property owners.

The distribution system consists of about 10 miles of cast-iron mains and 15 miles of Johns-Manville asbestos-cement pipe. The mains range in diameter from 4 inches to 16 inches. A 250,000-gallon elevated storage tank floats on the system to provide storage under pressure, and the system has a total of 156 fire hydrants.

The Department stocks a complete line of repair parts in a supply building located next to the clear well. This is a cement-block structure with a steel roof, and measures 40 feet in length and 30 feet in width. Adjacent to the building, the Department stores pipe and fittings.

Billing

Two men read meters quarterly. A full-time clerk prepares the bills and receives collections at the downtown office. Water users also can pay their bills at the two local banks. If a meter reader cannot gain entry to make the reading, he leaves a post card addressed to the water works with the meter dials printed on it, and requests the householder to fill in the readings and mail.

The readers check all water use and make a list of low readings or stopped meters. These are then exchanged and checked as soon as reading is completed. The records are checked for delinquent payment each fall so that these can be placed on the tax bill for fall assessment.

Salisbury, N. C., Gets Aerial Survey

SALISBURY, N. C., is in the process of getting an aerial survey that everybody can understand and use. The Aero Service Corporation of Philadelphia, Pa., is making an aerial survey covering the city's 10 square miles. The actual flying required only one day.

City Manager C. L. Lineback will shortly have a photo-map compiled from the photographs at a scale of 1-inch per 400 feet. This will be used for general planning purposes. In addition, he will have detailed topographic maps of selected areas. These show in detail the building, rivers, railroads, power lines, and land contours. The maps will be prepared to 2-foot contour intervals and at a scale of 1-inch per 100 feet.

Salisbury is the fourth Tar Heel city to contract for such maps in recent years. Durham completed its mapping program in 1951; Raleigh in 1952; and the city of Greensboro in 1955.

Road and park maintenance. The Universal 'Jeep' with grader or dozer blade demonstrates its versatility on road maintenance and grading as well as many other jobs. With the extra traction of its 4-wheel drive and special low gear range, it's a workhorse that helps keep work moving every day in the year. And with snow blade, it keeps roads, driveways and parking areas open.

Only 4-Wheel-Drive 'Jeep' vehicles do so many jobs so well!

Mobile power. The Universal 'Jeep' with power take-off operates air compressors, mobile welders, generators, winches and many other types of equipment. And 'Jeep' mobility saves travel time between jobs.

The 'Jeep' Station Wagon. With its ruggedness, stamina and "go-anywhere" dependability the 4-Wheel-Drive 'Jeep' Station Wagon is ideal for many maintenance assignments. It carries up to 110 cubic feet of equipment and supplies or 6 supervisors or workers.

Transporting workers and supplies. Whether it's snow, sand, mud or ice — rugged terrain or severe weather — the 4-Wheel-Drive 'Jeep' Truck gets workers, supplies and equipment through when other vehicles can't. It shifts easily into conventional 2-wheel drive on good roads.

Economy-minded officials everywhere are turning more and more to the 'Jeep' family of 4-Wheel-Drive vehicles to help get work done faster at lower cost. And no wonder! Their cost-cutting performances on an endless variety of jobs are matched with long life and low upkeep. And the extra traction of their 4-wheel drive takes them where other vehicles can't go. They shift easily into conventional 2-wheel drive for normal highway travel. Their "go-anywhere" dependability is extra insurance in public emergencies. See your nearest Willys dealer for a demonstration today, or write for information.

The 'Jeep'®
family of 4-Wheel-Drive vehicles

WILLYS... makers of the world's most useful vehicles

WILLYS MOTORS, INC., TOLEDO 1, OHIO

We Both Needed Natural Gas

Two Georgia cities combine forces to bring low-cost fuel to their people

By JOHN H. WOODALL, JR.
Mayor,
Woodland, Ga.

ABOUT three years ago, the Southern Natural Gas Company of Birmingham, Ala., came through our part of the state with one of its large, high-pressure lines, passing 7 miles south of town. This interested our neighboring city of Manchester, 5 miles north, and us. The quickest way to act on this was through our own municipal governments.

Our original plan contemplated Manchester's building a small, high-pressure line through our town and into its limits. This would enable us to use the same engineers, to build the systems. We expected Manchester to sell the gas to us.

However, this plan exploded about two years ago just as we were preparing to call for bids on the job. The gas company called Manchester's attention to their contract specifying that it could not sell gas to another municipality. As a result, we appeared before the Federal Power Commission to try to get this ruling changed. Because of the size of our town, we could not afford the 7 miles of transmission line.

The Commission ruled against us on our first attempt, but let it be known that it would entertain a proposal whereby we would contract with Manchester to transport gas, but that it was to be metered by Southern Natural, and that we were to pay the company for the gas.

Second Filing Successful

Our second filing with the Federal Power Commission contained such a contract. This gas company was directed to furnish the gas and meter it twice. The company first meters the entire volume, and next, the volume used by Woodland. It then bills Manchester for the first volume less the second.

The high-pressure supply line extending from Southern Natural Gas Company's 16-inch main to the Manchester system is 4½-inch steel pipe, coated and wrapped. The line extends through Woodland with a takeoff point near the city limit, with the metering furnished by the Southern Natural Gas Company.

Distribution System

The Woodland distribution system begins at the metering station and includes the regulator station, mains, services, meters, valves, and other appurtenances required to constitute a complete system. There are approximately 3,000 feet of 4½-inch pipe, 8,300 feet of 2⅞-inch pipe, 11,000 feet of 2⅜-inch pipe—all steel coated and wrapped. The steel pipe meets requirements of the A.P.I. specifications; all valves are lubricated plug valves and the meters were furnished by American Meter Company.

Most of our people immediately converted their heating and cooking equipment to natural gas, even though the system had been in use

Congratulations

A.W.W.A.

it's NATIONAL'S *birthday, too!*

We are proud to salute the American Water Works Association on their 75th year of progress and achievement in the Water Works field! And, we're proud for another reason—it's National's 50th Anniversary! For us, it means a half-century of progress increasing efficiency, carrying capacity and pressure of water mains *all over the world!*

Write us today for facts and information that shows how National's 50 years of experience cleaning water mains can restore your system to at least 95% of its original rated capacity.

You are cordially invited to visit our booths numbers 1 and 2 at the National Convention of the American Water Works Association, to be held in St. Louis, Missouri.

50TH
NATIONAL
ANNIVERSARY

WATER MAIN CLEANING CO.
50 Church St., New York 7, N. Y.

Price

Concrete Pipe for Cincinnati's Montgomery Road

Montgomery Road is a main artery that feeds into Cincinnati from the northeast. It carries a heavy load of traffic, so when an extension of a 36-inch water supply line was planned, ease of installation was an important consideration.

Prestressed concrete cylinder pipe turned out to be a happy choice. The job went smoothly for the contractor, A. F. Jelen & Son Co., and the highway was kept open to traffic even through congested districts like the one in the picture. Basic reason was the steel-and-rubber joint which is made quickly and easily . . . and incidentally makes a bottletight, yet flexible joint that is designed to take heavy traffic loads.

The line is 11,000 feet long and includes both 30 and 36-inch pipe. Along with 620 standard 16-foot lengths, the contractor installed 16 bends, 2 wyes, 3 reducers, 3 tees, 2 closure assemblies, one cross, and a number of short lengths and bevel adapters.

For information on any type of concrete pressure pipe for either water supply or pressure sewer lines, write Price Brothers Company, Dayton, Ohio.

only a few months. Our distribution system was designed and its construction supervised by J. B. McCrary Engineering Corporation of Atlanta, Ga.

This system has the distinction of being one of the smallest, if not the smallest, municipally-owned gas systems in the state. The total project cost was approximately $50,000, which included $20,000 of general obligation bonds specifically voted for the purpose of natural gas, and $30,000 of revenue-anticipation certificates.

Plan Talk on City Transportation

NO metropolitan area can live without transit and no transit can live without planning and adequate financial support, said an Interim Report filed by the Metropolitan Rapid Transit Commission, 50 Broadway, New York 4, N. Y., Governor Averell Harriman of New York, Governor Robert B. Meyner of New Jersey, and legislatures of both states.

The Interim Report stated flatly:

"There must be no public illusion. The choice is not between, on the one hand, keeping what we have or, on the other hand, getting something better. Actually, the choice is between a continuous worsening of what we have or going all out for the best.

"Many imposing portrayals of the future of this Metropolitan Area are being widely publicized; but they all seem to be built upon an ever-expanding network of vehicular superhighways financed with billions of dollars through public taxes, public subsidies in the form of tax exemptions, and private taxes in the form of tolls sufficient to liquidate all indebtedness and costs. Nowhere in these impressive visions for vehicular traffic is there the element of rapid transit for people.

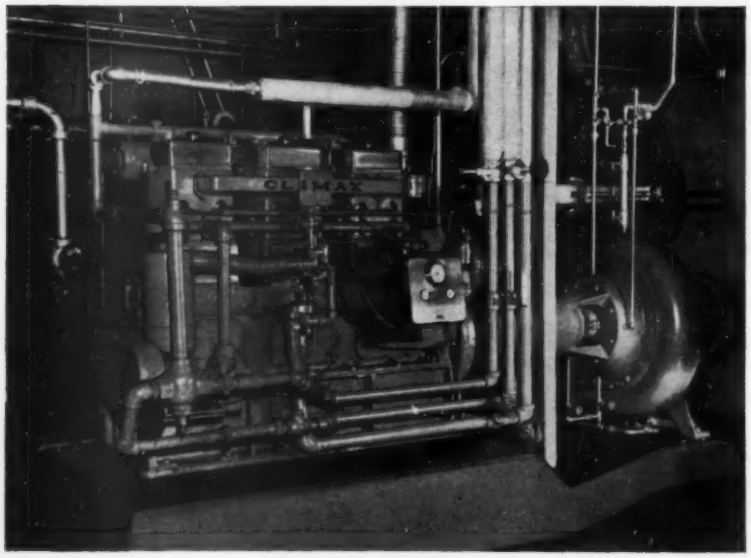
"It is the mandate and the hope of the Metropolitan Rapid Transit Commission to find and propose ways to reverse the increasing stagnation and decline of interurban rapid transit, and the consequent interference with natural growth and the free movement of people and commerce under the resultant attack of the avalanche of automobiles."

The Commission Report was filed by Charles H. Tuttle of New York and former State Senator Edward J. O'Mara of New Jersey, co-chairmen. The other members of the Commission are: Allen S. Hubbard, treasurer; Carl Whitmore; Ernest W. Williams, Jr., and William Zeckendorf from New York, and William F. Young, secretary; Thomas J. Harkins; John A. Kervick, and John F. Sly from New Jersey. Frank H. Simon is executive director.

New Dental Head Endorses Fluoridation

THE NEW head of the New York Academy of Dentistry recently added his endorsement of water fluoridation as a dental health measure. Dr. C. Raymond Wells stated that those who oppose fluoridation "are trying to disprove fact with unsupported theory." He presented the endorsement when inducted as president of the Academy.

The fluoridation of public water supplies, he maintained, has been the subject of more intensive study than any other measure in public health history and has proved safe. The use of pills containing fluoride, he said, has proved unsuccessful.



FINDLAY, OHIO

A Climax model R61 sewage gas engine direct connected to a horizontal 6 MGD centrifugal pump requiring 50 HP at 490 RPM.

When additions were made recently to the Findlay, Ohio, Sewage Treatment Plant, a Climax engine was selected for continuous operation of the raw sewage pump, due to its proven dependability, economy and low maintenance cost in this type of service.

Additions to plant designed by and construction supervised by Jones, Henry & Williams, Consulting Engineers, Toledo 4, Ohio.

climax

FOR COMPLETE INFORMATION, WRITE TO . . .

ENGINE AND PUMP MFG. CO.

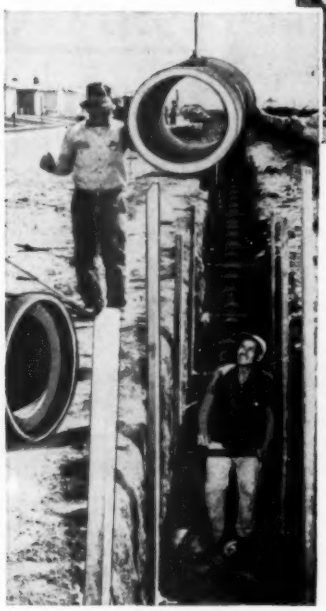
208 So. La Salle St.

CHICAGO 4, ILLINOIS

Factory–Clinton, Ia. *District Office*–Dallas, Tex.

VITRIFIED CLAY PIPE

first choice for *Another* BIG Housing Project!



TORRANCE, CALIFORNIA is attracting new families by the thousands with an unusual combination of job opportunities, ideal climate, and beautiful beaches. To meet the tremendous demand for modern housing, the vast Southwood Homes project is well underway, with a total of 2200 new homes planned and 816, comprising the first unit, already under construction. More than 67,000 feet of 4 through 18-inch Vitrified Clay Pipe have been installed as house connections, feeders, and mains.

Like many other mass-construction builders, those in charge of Southwood Homes know that it pays to use the best in sewerage materials. It pays in faster, more economical construction, as well as in dependable, trouble-free service—since Clay Pipe is the only sewerage material that is guaranteed . . . and *never wears out.*

Owner, subdivider, and contractor: Milton Kauffman—Don Wilson Co.

Sewer system designer: The Engineering Service Corp.

Sewer contractor: N. A. Artukovich Construction Co.

Vitrified CLAY PIPE

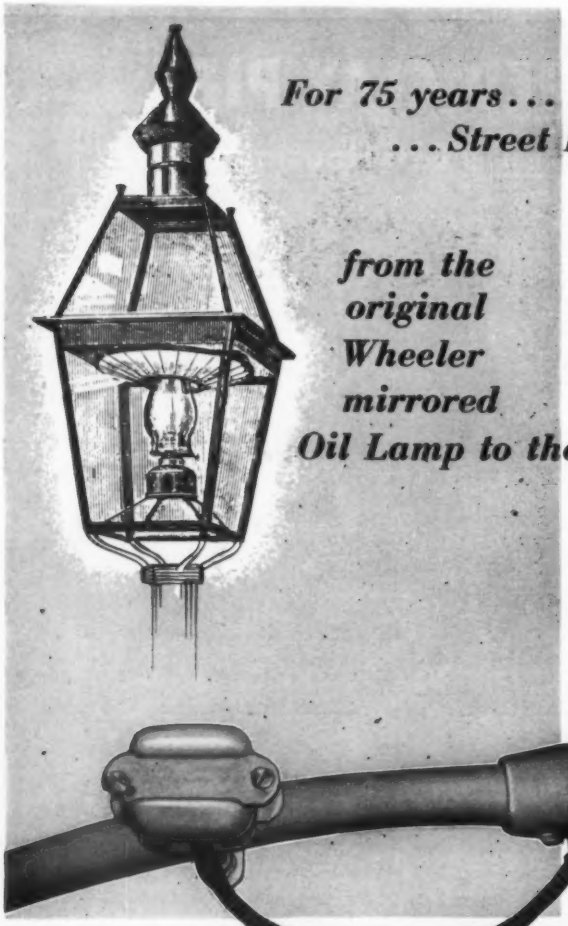
CLAY PIPE NEVER WEARS OUT!

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1820 N. Street, N.W., Washington 6, D. C.

206 Connally Bldg., Atlanta 3, Ga.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio

C-956-1

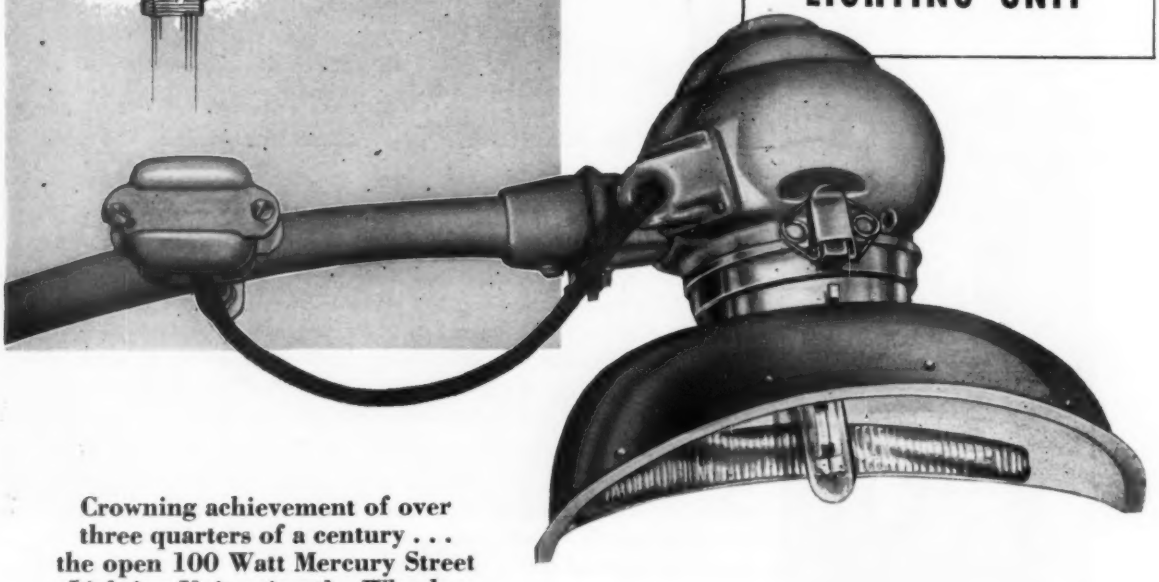
Progress in Public Health - Through Clay Pipe Research



For 75 years...
...Street Lighting for a safer America!

from the original Wheeler mirrored Oil Lamp to the modern

100 WATT
MERCURY STREET LIGHTING UNIT



Crowning achievement of over three quarters of a century... the open 100 Watt Mercury Street Lighting Unit using the Wheeler developed Crescent Reflector ... illustrating the advanced engineering that has made Wheeler Street Lighting first choice in modern, progressive communities everywhere.

Wheeler
congratulates the
ILLUMINATING ENGINEERING SOCIETY
on its 50th Year Golden Anniversary and welcomes all lighting people throughout the world to the
50TH ANNUAL NATIONAL TECHNICAL CONFERENCE
of the I. E. S.
September, 1956
Boston, Massachusetts

Wheeler **REFLECTOR COMPANY**
275 Congress Street, Boston, Massachusetts

The Keeper Of the Minutes

By CLELLAN KIBBE PRIEST*

Varying duties of city clerks are compared from the earliest times to the present day

THERE are, according to the Bureau of the Census, a total of 119,465 governmental units in the United States. Each of these, in the words of the Bureau, "is an organized entity having governmental attributes and sufficient discretion in the management of its own affairs to distinguish it as separate from the administrative structure of any other governmental unit."

And each of these units, as well as the 16,778 municipalities included, is served by a ministerial officer who shares, in greater or lesser degree, in the common problems and duties of municipal clerks since the beginning of civil society.

The clerk—the keeper of the minutes—may have many titles. He may be the city clerk, the town clerk, the city secretary, the secretary of the board, or just plain clerk. Or he may combine the office with that of manager, treasurer, auditor, or head of one or more governmental departments.

The duties and functions of no two clerks are exactly alike. But the clerk is always the custodian of the records of the community which he serves and, in practice, its official "memory."

History

He has many interesting early relatives. In the 1500's in England there was not only the "toune clarcke," but also the "clerc comptroller of the king's honorable household." In 1603 there was a "clearke general of the armie." King Henry the Eighth had a "Clarke of the Spicery"—with his eight wives he undoubtedly needed one—and King Charles II had his "Clerk of the Robes."

Ancient Greece, in 400 B.C., had a city secretary who read official documents publicly. At the opening of a meeting, one of his duties (which might be worthy of consideration for revival today) was to read a curse upon anyone who should seek to deceive the people.

The early keepers of the archives, incidentally, were often called "remembrancers," and before writing came into use, their memory was the public record.

The office itself can thus be traced back to mankind's first communal groups, but the title "clerk" as we now know and use it derives directly from the Middle Ages. Originally, according to the Oxford English Dictionary, a "clerk" was any member of a religious order, a "cleric" or "clergyman." Since, for all practical purposes, the scholarship of the Middle Ages was limited to the clergy, the name "clerk" came to be synonymous with "scholar." And gradually, with the passing years, it acquired such associated meanings as *notary, secretary, recorder, accountant,* and *penman.*

Clerks Today

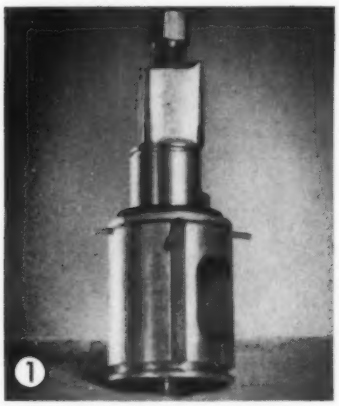
Under English church law, a clerk was anyone who had been admitted to the ecclesiastical state, and "had taken the tonsure." A gathering of male city clerks today could inspire the comment that a similar definition might apply to admission to the municipal state. In fact, one J. Donovan, back in 1827, studied the tonsure of St. Peter, which consists of a bare patch on the crown of the head, and suggested that the size of the tonsure be enlarged as the wearer advanced in orders. With most city clerks, this seems to come naturally.

Tonsure or not, a city clerk, like a clergyman, has to be all things to all people. In this age of specializa-

* Mr. Priest is a member of the National Institute of Municipal Clerks. He has recently retired from his post as city clerk of Newport Beach, Calif., a position he held from 1948 to 1955.

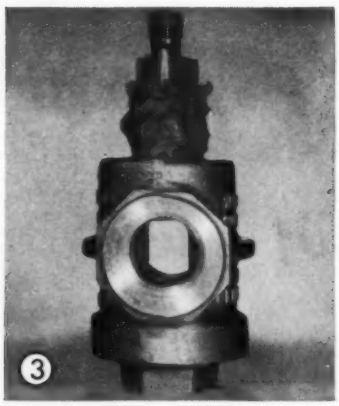
*SEE HOW *Controlled*
PRESSURIZED LUBRICATION
GUARANTEES LOWEST COST SERVICE FROM

HOMESTEAD *lubricated* PLUG VALVES



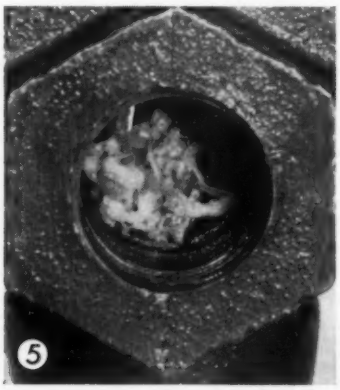
This plug was removed from a Homestead Valve just after starting lubrication, and before all sealing areas were filled with lubricant. Note that pressurized lubricant continues to extrude through feeder holes. Momentary downward movement of plug at start of each lubrication, gives assurance that plug is always free to turn.

The plug was again withdrawn from the valve body just after a ring of lubricant around the stem indicated that the lubricant system was full. Note that all lubricant grooves are filled. The entire plug surface is coated with lubricant. Lubricant is well packed in the stem sealing area above the plug.



Now valve has been purposely over-lubricated as indicated by excess lubricant around stem. Note that with *controlled* pressurized lubrication there is no extrusion or seepage of lubricant into valve port opening. This means no waste, no contamination of line fluids, no clogging of low pressure lines with lubricant, or fouling of meters, orifices, etc.

Also, in the Homestead Valve with *controlled* lubrication, you will note that even though the valve has been over-lubricated, lubricant comes only to the bottom edge of the plug, and is not wasted by discharging in quantity into the bottom chamber.



Now, see for yourself the risk involved when a valve which does *not* have Homestead's *controlled* Pressurized Lubrication, is over-lubricated. Note lubricant has been forced into the port opening. It can contaminate line fluids, foul meters or orifices, or even block low pressure lines!

*Unretouched photos.

These are but a few of the many advantages of Homestead's controlled pressurized lubrication that guarantee lowest cost valve service.

Reference Book 39-5 has the full story—twenty-eight pages of engineering facts, sizes, types, dimensions, etc. Ask for your copy today. There is no obligation.

HOMESTEAD LUBRICATED PLUG VALVE (Pat. Pend.)

HOMESTEAD VALVE MANUFACTURING COMPANY

P. O. Box 46 *"Serving Since 1892"* Coraopolis, Pa.

tion the office remains an oasis where a wide knowledge of a variety of things may be an asset instead of a debit. The clerk may be, and commonly is, an administrative official of local government, although he may not be recognized as such.

In Minnesota he may be a member of the village council and have a part in the council's deliberations and a vote on the board. On the other hand, his duties may be limited to the secretarial tasks of recording and preserving the minutes of council meetings.

No matter how restricted or how extensive the clerk's executive powers, the office of the city clerk is the most important nonpolicy-making office in representative government, for it is through the clerk that the citizen meets his local government on its home grounds.

The annual report of Rockville Centre, N. Y., states:

> The clerk's duties are the most varied of any village official. He prepares the agenda and compiles the minutes for the meetings of the Board of Trustees. He transmits to the proper departments or individuals the decisions of the Board. He handles correspondence for the Board and is responsible for the publication of all public notices. He confers with representatives of civic groups or with individual residents who have complaints or suggestions. He is custodian of official records. He is the chief local election official and administrator of village civil service. He is purchasing agent and assessor, and in every sense of the word, the administrative officer of the village.

Kansas

In Kansas the accent is on the fiscal functions of the office. Clerks attending the first annual training school for city clerks were told by a representative of the State Department of the Budget:

> It is the duty of the city clerk to become fully informed of the statutory requirements for a city fiscal system and to take the lead in bringing the city's fiscal system up to those standards.
>
> The city clerk is, by law, made the custodian of most of the city's financial records. He is required, by law, to keep fund accounts with the city treasurer. The cash-basis law requires the clerk to keep a record of all obligations of the city.
>
> The budget law requires the clerk to keep budget accounts for each of the several funds. Except in manager-form cities, the clerk issues warrants drawn on the treasurer, and warrant checks drawn on the bank, for the expenditure of money.

Michigan

In Michigan, the role of the city clerk can be encyclopedic. A Dearborn report notes:

> In the expansive southeast corner of the city hall's first floor there is concentrated more information about more Dearborn people than in any other agency of the city government.
>
> If a resident was born here, is registered to vote, has taken out a license for some kind of business, or communicated with the City Council by letter or petition, the city clerk has that and other supporting information in his archives.
>
> The citizen's closest link to the democratic process of voting is maintained through the city clerk's office. From registration to counting the ballots is handled by his staff.

Minnesota

In Minnesota, the official manual points out that the clerk:

> . . . must know not only what probably should be done as a matter of policy, but in addition must know how things are to be done. The daily minutiae fall to his lot. In addition, he is often called upon to know, "How did we do this last time?" because the details of execution have not become a matter of familiarity to other members of the village council.

Illinois

In Illinois, the "Handbook for Illinois Municipal Officers," published by the Illinois Municipal League, makes it clear that:

> The clerk of a city or village has general supervision over all officers charged with the receipt, collection or disbursement of revenue, and has custody of all documents, books and papers pertaining thereto. It is his duty also to prepare an annual estimate of expenses for use in the preparation of the annual appropriation ordinance.

Clerks As Watchdogs

But more important than all the responsibilities that have been cited, is a general obligation that applies to municipal clerks everywhere—whether elected or appointed. This duty was succinctly expressed by Harry Williams, as city attorney of Montebello, Calif., in an address before the fifty-third annual conference of the League of California Cities.

Mr. Williams said that the city clerk has the "implied responsibility of keeping an eye on the administration and acting as watchdog in behalf of the public."

Some writers on the subject of local government have not been so flattering. Ernest W. Steel of the University of Texas, in his textbook, "Municipal Affairs (1950)," states:

> The city secretary, known in many cities as the city clerk, is primarily the secretary of the city council. He is invariably (sic) appointed by the council and removed at its pleasure.
>
> It will be seen that the secretary has many duties. Individually these duties are merely clerical and of no great importance. In the aggregate they are essential to satisfactory municipal administration; and a competent city secretary, who through years of experience has been acquainted with city and council procedure, is an important official.

Thomas Harrison Reed, writing on "Municipal Management" in 1941, took occasion to remark:

> The clerk's office is a favorite for spoilsmen since none of its duties seem to call for any special technical training. The office takes in relatively large sums of money as fees, and this leads to carelessness in creating jobs which are not reflected in the tax rate. Clerks are slow as a rule to introduce labor-saving devices. . . .

Clerk's Status Is What He Makes It

By and large, the status of the municipal clerk in his particular local scheme of government has always depended upon the individual. He can take a formative interest in the community, or he can content himself with a stenographic role. The decision rests with the individual.

That this is true is generally recognized. In far away South Africa, John P. R. Maud, reviewing a half-century of self-government in Johannesburg, said:

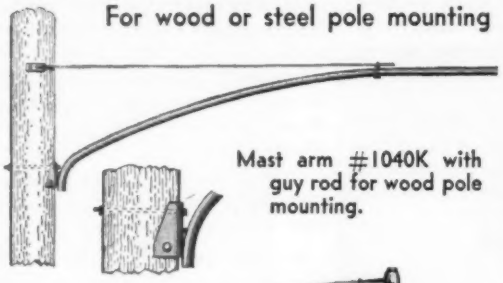
> The town clerk of Johannesburg has always been recognized in theory as the council's chief officer. But he has never had any constitutional power to distinguish him from the other department heads; and his actual power in relation to them has always depended on the personal qualities of the individual.

It is thus evident that the composite individual who fills the office of clerk of a local governmental unit is a more important part of the administrative machine than many citizens realize. He not only controls the sources of information that form the foundation of a continuous local government, but he also threads a maze of interrelated administrative and ministerial duties. *Behind a smooth-running local administration there is always a well-organized clerk's office.*

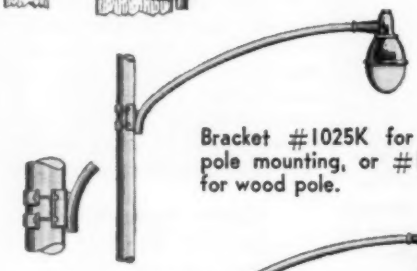
KERRIGAN Weldforged
Steel Brackets & Mast Arms

For Economy & Beauty

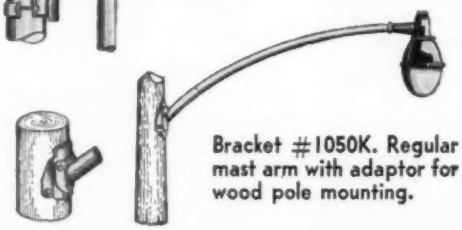
For wood or steel pole mounting



Mast arm #1040K with guy rod for wood pole mounting.



Bracket #1025K for steel pole mounting, or #1035K for wood pole.



Bracket #1050K. Regular mast arm with adaptor for wood pole mounting.

Kerrigan's complete line of brackets and mast arms are carefully engineered for easy installation and wiring. They meet all I.E.S. street lighting recommendations. So, take advantage of your wood poles now in place and brighten up your city or town NOW!

Let us help you

solve your city's lighting problems. Send for our FREE catalog containing engineering data. It shows how simple installation really is.

KERRIGAN IRON WORKS, INC.
Nashville, Tennessee
Gen'l. Sales Office — 274 Madison Ave. — N.Y.C.

NEW UPRIGHT

FLORLINE MARKING MACHINES

With many operating advantages of heavy power machines PLUS
• **Light Weight** • **Easy Handling** • **Low Cost**

REGULAR		KING-SIZE
Paint Cap. 1½ gal.		Paint Cap. 5 gal.
$117.50	F.O.B. Detroit	**$152.50**

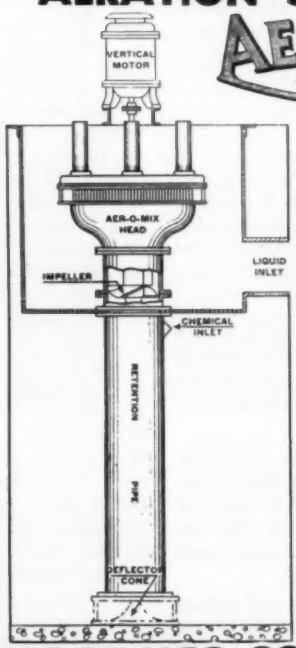
Nation wide, communities cut line marking costs with Florline. Gravity feed. No motor, compressor, attachments. Makes lines around and between cars. No mist hazard. Makes straight, curved, continuous or skip lines at walking speed.

Stays on track with slight operator direction. 18" line-guide folds back at curb or wall. Interchangeable carriages for 4", 3" or 2" widths available. Can't spill. Portable, easy to clean, store. For narrow aisles, rear wheels easily removed to convert to 2-wheel machine only 8" wide. Other models under $100. Fully guaranteed.

H. C. SWEET COMPANY
12345-A Telegraph Road — Detroit 39, Michigan

WATER AND SEWAGE AERATION SIMPLIFIED

AER-O-MIX
AERATOR – MIXER



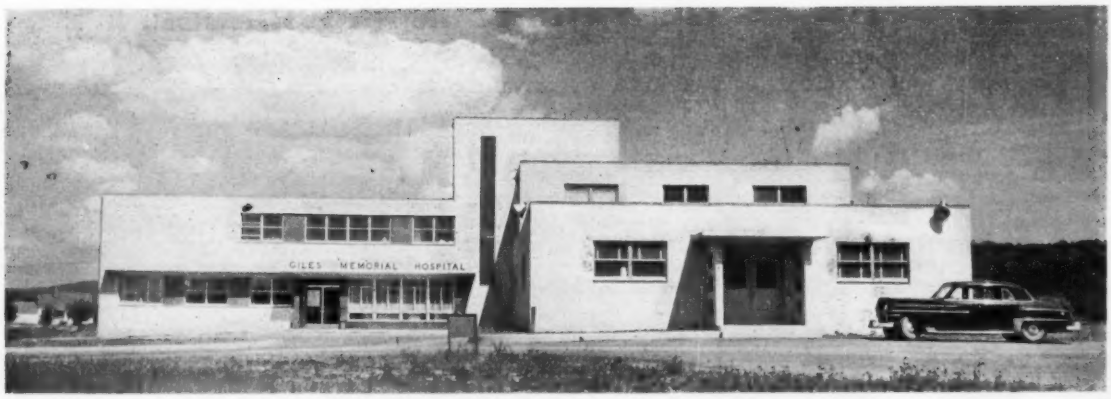
NO
NO compressor
NO diffuser plates
NO air piping systems

◀ *See illustration*
Aer-O-Mix air tube head
impeller
motor
deliver finely distributed air IN COMPRESSION throughout the water or sewage, for intimate contact and controlled agitation.

Installs in small space indoors or outdoors. All capacities.

For complete information, write

VOGT MFG. CO., INCORPORATED
P. O. Box 922, Louisville 1, Ky.



The five-year-old, nonprofit community hospital.

Progress Comes to Pearisburg, Va.

The story of a small town that was alert when the opportunity for growth arrived

By E. L. QUISENBERRY
Town Manager
Pearisburg, Va.

PRIOR to 1940, Pearisburg was a little, unnoticed, unimportant trading center for a farming area. It had no major industry and apparently little prospect of developing one. For all intents and purposes it had grown about as large as it normally could expect, being impeded by its own limited economic future. It had two paved thoroughfares and one town employee who served as police chief, a water and street superintendent, and a town clerk.

Today, it has a major industry. It also has paved most of its streets and has a well-equipped street maintenance department. It has a municipal refuse collection system, a town manager, a clerk, a two-man police force, a town justice, an attorney, and an auditor.

Challenge Accepted

The Celanese Corporation of America spelled the difference to Pearisburg. Back in 1940 it offered a challenge that the little municipality accepted with enthusiasm. The corporation proposed to build a plant and also to build a number of homes for its employees if the town could guarantee the availability of needed utilities. The Council agreed to offer water and sewerage services to the new residents. The local electric utility guaranteed to have electric power available, and progress in Pearisburg became jet-propelled.

The town promptly retained an engineering firm to prepare preliminary plans for water and sewerage needs. Shortly thereafter it passed a bond issue of $185,000 to cover the cost of a new reservoir for the newly developed area and to provide the needed sewers.

Now the town has 16 miles of streets, a half mile of which, is unsurfaced. The street department is equipped in business-like fashion. An inventory of its major equipment reveals: a 165-gallon tar kettle, a Barber-Greene asphalt pug mill, a Galion tandem roller, a 2-ton dump, an Adams 201 motor grader, a LeRoi Tractair mobile air compressor, and a Tarco "Scotchman" salt spreader.

The asphalt pug mixer has a capacity of 6 tons per hour. The Tractair mobile air compressor is actually a small tractor with a front-end loader, an underbody blade, and mowing attachments. Pearisburg is not so far south that it does not have to be concerned about ice problems. The Tarco "Scotchman" salt spreader has been keeping streets safe in winter.

Refuse collection and disposal practices also have progressed along lines that reflect good government. Prior to 1941 the town had a partial system of private collectors using open trucks. Today, the system embraces the entire municipality, using modern, closed, compactor-type equipment. Currently, the town provides one pick-up per week in residential areas and more frequent service for business areas. The service is self-supporting. There is a charge of 75 cents per month for one pickup per week. A 10-yard Gar Wood Loadpacker does the work.

To dispose of the refuse, the town is currently filling a large sink-hole three miles outside the corporate limits.

Progressive Administration

The town also has shown progress in its orderly handling of new developments. Today, its ordinances require a builder to install water and sewer lines, and to grade and surface the streets in accordance with town specifications. This has insured that reliable developers do their work according to commendable municipal standards.

Water supply has advanced to a solid status. The 750,000-gallon concrete reservoir is located high enough in the hills to provide good water pressure. For supply, the water works uses a series of springs in the nearby mountains and one well. A 30-hp Sumo-Submersible pump in the well delivers 115-gallons per minute. The distribution system consists of cast-iron pipe with Mueller valves and fittings. The hydrants are both Mueller and Mathews.

The town's new system of sewers

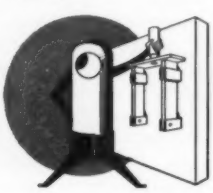
CONTROLLING STREET LIGHTS IN PROVIDENCE, R. I.

Motorists and pedestrians in Providence can thank their City Government for authorizing The Narragansett Electric Company to install dependable, automatically controlled street illumination.

The use of Fisher-Pierce street lighting controls assures dependable *automatic* illumination of streets the moment daylight drops below a safe value. Because F-P controls are photoelectric, they operate regardless of the hour, the season or the weather.

On the job in Providence since 1946, F-P controls now number about 3000. Narragansett engineers report favorable installation economics *and* an extremely low failure rate — only 2.29% of *all* units during a recent 12-month period.

Long, dependable service of F-P controls — in street lighting control systems in Providence and hundreds of *other* communities — is the basic reason Fisher-Pierce is recognized as a *leader* in its field.



THE
FISHER-PIERCE
COMPANY, INC.
94 Pearl St., So. Braintree, Boston 85, Mass.

EXPORT: PHILIPS EXPORT CORP.
DIVISION OF NORTH AMERICAN PHILIPS
100 E. 42ND STREET
NEW YORK 17, N. Y.

IN CANADA:
NORTHERN ELECTRIC CO., Ltd.

provides this sanitation service to all but 10 remotely located homes. The system has one pumping station. An Imhoff tank provides treatment.

Pearisburg, today, has a new nonprofit community hospital only five years old. It opened as a 48-bed unit, but 16 beds have been added since then, without extending the building. It is the only hospital in the country that is completely heated in the winter and air-conditioned in the summer by the same heat-pump unit.

To direct recreation, the town has a Park Commission, a nonpay group appointed by the Council. Currently, it has taken a 13-acre plot of ground and has developed picnic areas, recreational facilities in the form of swings, merry-go-rounds, wading pool, and other facilities. A recreational director employed only in the summer season has organized softball leagues for various age groups.

Local citizens raised funds totaling $25,000 for the building of a swimming pool which is also in the area.

Progress still is the keynote in Pearisburg. The city has a new charter, a comprehensive bookkeeping system, and a municipal building, all designed to permit progress to continue since it has brought so many benefits to this little city.

Correspondence Course in Local Planning Administration

A COURSE IN local planning administration is being conducted by the Institute for Training in Municipal Administration of The International City Managers' Association. Its purpose is to inform mayors, and city managers, as well as planners, of the latest municipal planning practices and to provide other public officials with the knowledge of things to do and look for in the preparation of a community plan.

The course outlines the scope and methods of city planning and the organization and administration of local planning agencies, as well as various departments of planning, i.e., zoning, street systems, transportation, recreation, residential and industrial districts, and long-range financing.

A $60 fee covers the textbook, individual lesson instruction, a selected bibliography, and a certificate upon satisfactory completion of the work. Full college credit is given for the course by the University of Chicago. For further details address the Institute for Training in Municipal Administration, 1313 East 60th St., Chicago 37, Ill.

Modesto Wants Name for "Young Solid Citizens"

IN MODESTO, CALIF., Mayor Harry Marks and his city council are getting sick and tired of all the attention given to the submerged 2% of the city's young people, known popularly as "juvenile delinquents." With the help of City Manager Ross Miller, a contest is being sponsored to find an equally eye-catching term to describe the 98% of the youngsters who are a credit to the city.

The contest details essentially request a good, catchy term, such as "Young Solid Citizen," plus a short explanatory essay. Prizes will be given for the outstanding entries from each school and for a sweepstakes winner.

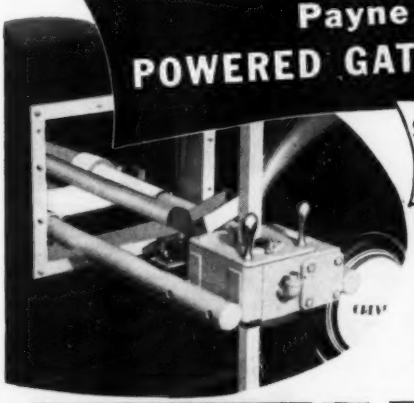
The contest is the city's way of emphasizing, positively, its appreciation for the overwhelming percentage of fine substantial young citizens to discourage the thought that the only way to win special attention is to become a "problem child" within the community.

Make every valve a Power Operated Valve!

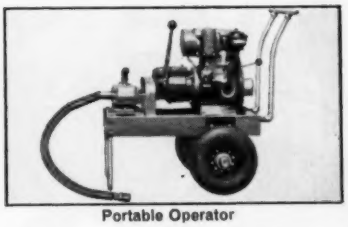
Payne Dean
POWERED GATE-OPERATORS

Save hundreds of man-hours

Cut costs and improve maintenance



Truck-Mounted Operator



Portable Operator

Valves should be inspected, opened and closed at least twice each year. You can easily keep this schedule of recommended maintenance . . . within your budget . . . by making every valve Power-Operated with Payne Dean Powered Gate-Operators.

Truck models operate from truck transmission . . . portable units from 3 to 7½ H. P. . . . operate valves and gates as large as 60". Save time . . . reduce cost . . . improve maintenance.

MANUFACTURED BY
PAYNE DEAN & COMPANY
CLINTON, CONN.

Distributed by

James B. Clow & Sons
INC.
201-299 No. Talman Ave., Chicago 80, Illinois

Please send me information on Payne Dean Powered Gate Operators.

Name .....
Title .....
Address .....
City ..... Zone .....
State .....

Is *Water shortage* endangering the future of your community?

Badger Water Meters conserve present supplies by giving an exact accounting of usage and waste

Caught in a two-way squeeze between fast-growing population and booming industry, many communities suddenly find themselves with outmoded water facilities. The time to act is NOW if declining water supplies threaten the future of your community. Metering *all* water is the first logical step toward conserving present supplies . . . recording *where* and *how much* is used. Fair rates for all help keep water departments *self-supporting*. Safeguard tomorrow's water needs TODAY.

• For complete information on how metering can insure the future of your community, contact your Badger Meter salesman or write us direct:

Badger Water Meters

Water is Vital

Badger Meters have conserved it for 50 years

BADGER METER MFG. CO., MILWAUKEE 45, WISCONSIN

Defining Work Units for Performance Budgets

Reducing complex municipal operations to a series of work units is a crucial step in setting up a performance budget system. Here are some helpful guides for this step.

By GEORGE C. SHANNON
City Manager
Anchorage, Alaska

A RELATIVELY new form of municipal budgeting is being put into practice in city and town halls throughout the country. Known as performance budgeting, the new system assigns expenditures to the performance of specific services in accordance with (1) the unit costs for services and (2) the total amount of the service to be performed during the year. Thus, funds appropriated for street cleaning would be allocated in accordance with the unit cost of sweeping one mile of street surface and the total length of streets to be cleaned in one year.

As all municipal officials will recognize quickly, such a system of budgeting is in marked contrast to the traditional line budget that lists expenditures for salaries, materials, capital needs, etc., for the municipal departments that perform groups of services.

Although the establishment of such a budgeting system presents some difficulties, its advantages soon outweigh these initial problems. For at a time when more and more city governments find themselves faced with the need to expand their services to meet the demands of growing populations, a budget system that is based on unit service costs provides an excellent administrative and financial tool for controlling rising expenditures. The system is also especially well adapted for use in forecasting future operating expenses for different assumptions of standards of service and community growth.

As a municipality turns to performance budgeting, however, it becomes necessary to define the work of each city department and to measure the units of work for the services performed by the departments. In many instances, difficulties are encountered in measuring such work units. Here are some guides to help officials overcome these problems.

First Steps

The method of establishing units of service is first to itemize the various functions of each department. A good organizational chart will serve as a useful guide in this step.

Each function should be divided into the sub-functions which make up the general public service. For example, the city engineering department may perform public service functions of street maintenance, public sanitation, water supply, equipment maintenance, plus general engineering services. Each of these usually will have sub-functions. For example, the sub-function of street maintenance may include maintenance of paved streets, unpaved streets, drainage structures, street lighting, sidewalks, and street name signs. It may also include dust and ice control, snow removal, and other distinct divisions of public service that pertain to streets. The sanitation function may include the sub-functions of refuse collection, refuse disposal, sewage collection and disposal, and street cleaning.

Sub-Functions

Each sub-function will represent a distinct service that can be accomplished only by a series of different work operations, and each operation will have its own unit of measure. For example, in performing refuse collection functions, the number of customers served, coupled with the frequency of service, will give a unit of useful measure in estimating the number of pick-up stops, the number of customers that require alley or curb collection, and how many will require "pack-out" collection. This careful definition and separation of work components is important since different types of service may and often do require more man-hours to perform than others.

A further evaluation in refuse collection work will be the determination of the volume of refuse hauled, the size of truck used, and the distance of haul to the dump. In areas where there are numerous trees, a special service may be rendered in the hauling of brush, for which separate units of measure will be needed. Once work units for various operations are defined in this manner, it becomes a comparatively easy procedure for the city departments to estimate accurately their annual budget requirements on almost any basis such as expanded services or higher standards of service.

Units of Service for Office Work

In most cities an analysis of each of the public work functions is comparatively easy because local engineers often have been doing cost accounting analyses and have been maintaining extensive records. But units of service can also be determined in office procedures.

For example, sub-functions of a department of finance will often include billing of utilities, reimbursible job orders, and other special service charges. An analysis will show that units for these services can be determined in terms of numbers of accounts handled, numbers of services billed, and numbers of items billed, because these units are all specific measurements of work accomplishment and indicate work volume.

A certain amount of time also will be spent in the sub-function of customer service, which can be evaluated according to the number of cut-in and cut-out orders, handling billing complaints, and providing information regarding services. These units of work are measurable and are helpful in evaluating work loads of personnel within the subfunction.

Library Services

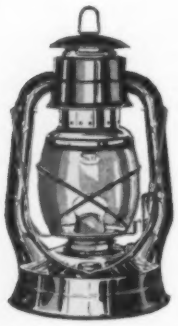
Library services have definable service units. Such units would include the number of volumes to be cared for, book circulation, reading-room use, new books catalogued, books repaired, library cards issued, fines paid, research questions answered.

All the illustrations above are activities of work that must be accomplished in order to provide the respective public service functions. In many instances, detailed data pertaining to these services are readily available from long-established reports by the departments involved. If they are not available, the information can be obtained by the estab-

by **DIETZ**

WARNING LIGHTS

No. 87 Torch—up to 30 hours of steady, weather-resistant burning. Ideal for excavations, road shoulders, rubbled areas.



"Little Wizard"—up to 30 hours of wind-defying light that burns bright, *stays* bright to the very last drop!

Sound, highly visible safety lighting that's dependable in all weathers . . . *How much does it cost?*

Seldom more than ¼th of one percent of your cost for the project!

Yet serious accidents due to inadequate safety lighting *can* cause an upward revision in insurance rates that makes *good* lighting seem cheaper than ever!

When you protect the public, you protect *your pocketbook* — or the one you're responsible for.

Dietz does it . . . for pennies per day!

Here is the most complete line of long-burning kerosene lanterns and torches on the market.

Here is *dependable* night-long protection for drivers . . . for pedestrians . . . and for *you*!

● Ask your safety lighting man to take a good look at the *DIETZ* line of safety lanterns and torches, at your distributor's or hardware dealer's. R. E. DIETZ COMPANY, 100 Leavenworth Ave., Syracuse 1, New York.

DIETZ

OVER A CENTURY OF SAFETY LIGHTING

lishment of routine procedures of recording by each employee.

Nonmeasurable Services

There are several municipal services that are generally considered nonmeasurable. Such services are a necessary part of governing, but their frequency is not as easily determined as those for the line services described above. It is often thought that police service could not be measured in units of service, because the objective of police work is to discourage and prohibit crime or law violations. However, police service rendered on a high standard can be analyzed as effectively as any public works service. It is recognized that frequency of patrol is one of the criteria of good police protection.

Patroling is varied in accordance with type of business area or neighborhood. An application of the standard of service on the basis of square miles covered by a patrol for each type of area and by type of patrol can serve as a unit of measure to describe this service in a work program budget. There are still limitations as to the amount of work that can be accomplished by a police officer, whether it is making an arrest, checking fingerprints, solving major crimes, directing traffic, or checking vice. A work program for a police department can, therefore, be described in terms of standards of police protection and number of production units in those measurable activities possible under the budget appropriation. Unscheduled demands in one area of police work should be met either by sacrificing a standard in other areas of police service or supplementing the police budget to meet the unscheduled demand.

Service Units for Fire Protection

Fire protection service is in a similar category in that its best performance exists when it has little work to perform. Since it is a service in state of readiness, it must perform efficiently. Certainly the work program of a fire department would include a description of training, disposition of personnel in terms of shifts and station assignments, amounts of fire prevention activities, inspections, public relations activities, and area of coverage for each fire-fighting unit. These units of service may not be measurable in the exact sense that the other services are, but a description of units of service performed

(Continued on page 195)

How Dodge Makes Highway Patrolling Much More Efficient!

The ideal car for highway patrol and emergency police duty must combine speed, stamina and stability. These requirements are perfectly met by the new '56 Dodge "230" Pursuit Car.

In support of this broad claim, we offer as a "material witness" the regular stock closed car that shattered 306 official AAA records in a speed and endurance test on Utah's famous Bonneville Salt Flats.

Clocked at 114.05 mph. in a "flying-start" mile, the same Dodge hit 79.55 mph. in a "standing-start" mile and averaged 92.86 mph. for 31,224 miles. That's *faster and farther* than any car of its type and class has ever been driven non-stop, establishing an all-time AAA performance record.

This '56 Dodge "Pursuit" police car, with its Super-Powered Super Red Ram 230 hp. V-8 engine* for pick-up and maximum speed . . . its long, low 120-inch wheelbase for greater stability . . . its endurance proven by the test described above, deserves your earnest consideration when selecting one or more vehicles for highway patrol or emergency duty.

Your nearby Dodge dealer will be glad to tell you about four police car models now available: 2-door and 4-door sedans, 2-door and 4-door station wagons with optional cots that lock to body side panel. Drop in and see him today.

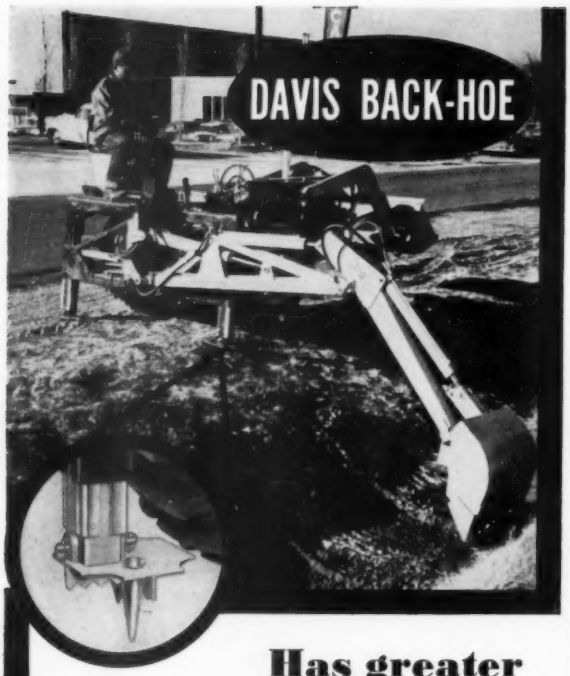
**Red Ram V-8 and Get-Away "Six" engines also available.*

EXTRA-VALUE FEATURES OF STANDARD EQUIPMENT IN THE NEW '56 DODGE "230" PURSUIT CAR.

In addition to a long list of safety features that help to reduce driving hazards, the following items of standard equipment mean greater ruggedness and dependability in operation:

- Heavy Duty Chassis Springs
- Heavy Duty Shock Absorbers
- Heavy Duty Seat and Back Cushion Springs—Front and Rear
- Heavy Duty 60 amp. Battery and Heat Shield
- Heavy Duty Clutch
- Heavy Duty Transmission 3-Speed Manual Shift
- Reinforced Frame
- All Vinyl Trim
- Heater and Defroster
- Directional Signal Lights
- Variable-Speed Windshield Wipers
- Map Light
- Heavy Duty 30 amp. Generator

New '56 DODGE *"230" Pursuit Car*



Has greater utility...extra stability

You can do dozens of jobs with the Davis Back-hoe that you can't with any other back-hoe. Cleaning ditches is just one of them! That's because the Davis operates to the side as well as to the rear, and doesn't require room to stretch out. Two individually controlled hydraulic stabilizer feet in the extra wide frame make it virtually impossible to turn over, and let you level up on slopes. Comfort and visibility are tops. You always face your work without twisting, and you can always see where you're digging. It can be detached or attached to the Davis Loader in less than five minutes. Priced lower than the average. Highest quality unit available. Compare it, and you'll agree.

DAVIS LOADER LEADS THE WAY

The running mate to the Davis Back-hoe is this powerful Davis Loader. It has maximum strength, speedy action, streamlined design for maximum clearance and visibility. Quality built, yet reasonably priced. Many attachments. Available for most tractors.

SOLD AND SERVICED NATIONWIDE BY BETTER DEALERS

Mid-Western Industries, Inc.
1009 South West Street
Dept. A, Wichita, Kansas

Please send me literature and name of dealer on
Davis Loader ☐ Davis Back-hoe ☐

to fit a.....tractor.
(Please Print)

NAME.....

ADDRESS.....

TOWN.....STATE.....

No other filtering medium compares with

ANTHRAFILT

Trade Mark Reg. U. S. Pat. Off.

Anthrafilt stands alone as the one Filtering Medium that is *best* for all types of filters.

Years of efficient and economical use in every type of filter plant has made ANTHRAFILT the standard of excellence in the filtering medium field.

ANTHRAFILT

offers important advantages over sand and quartz

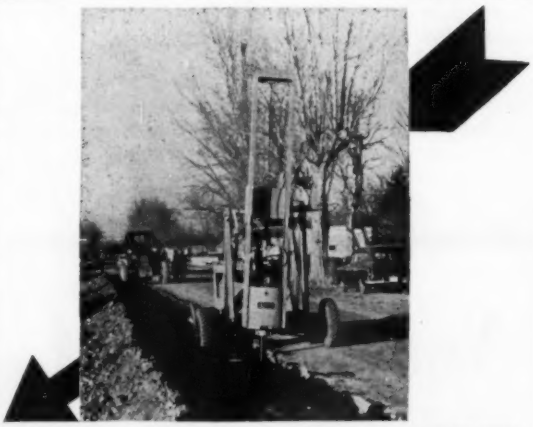
DOUBLES length of Filter runs. • REQUIRES only half as much wash water. • KEEPS Filters in service over longer periods. • INCREASES Filter output with better quality effluent. • GIVES better support to synthetic resins. • PROVIDES better removal of fibrous materials, bacteria, micro-organic matter, taste, odor, etc. • IDEAL for industrial acid and alkaline solutions. • EFFECTIVE filtration from entire bed. • LESS coating, caking or balling with mud, lime, iron, or manganese.

IDEAL FOR USE IN EVERY TYPE OF FILTER

Write for further information, test samples and quotations to:

PALMER FILTER EQUIPMENT CO.
P.O. Box 1696 — 822 E. 8th St., Erie, Pa.

Representing:
ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.



WATER WORKS SUPERINTENDENTS

Here's a One-Man Crew

An ARROW MOBILE HYDRAULIC HAMMER and ONE OPERATOR can do the work of two, three or more men using ordinary equipment, for breaking pavement, cutting asphalt, compacting trench backfill, or doing any of dozens of special jobs. By reducing time and labor, you save money by using ARROW MOBILE HYDRAULIC HAMMERS. They can be moved from job to job over streets or highways on their own power. Exclusive creeper drive, with foot-controlled start or stop action, permits operator to compact without skipping or overlapping blows. See the ARROW MOBILE HYDRAULIC HAMMER at **The Geo. F. Smith Company**, in St. Louis, during the convention, or . . .

Write for Name and Location of Your Nearest Dealer

ARROW MANUFACTURING CO.
192 WEST DAKOTA AVE. DENVER, COLORADO

(Continued from page 192)

and standards of service to be provided has a place in a performance budget.

Work Units for Managers Offices

Even units of service can be established in a city manager's office and city attorney's office when examination of the work performed receives the same type of administrative analysis as has been suggested for other functions. There are routine activities in any office that have a repetitious nature, and experience shows that there will always be a volume pattern.

This pattern changes as population increases and, on the other hand, becomes somewhat static as the rest of the functions become static insofar as work volume is concerned. Descriptive units of service in each of these so-called nonmeasurable functions will still help in the preparation of a performance type budget. As the units of service are established, then these units can be converted into dollars required, thus interpreting the budget for the Council and the tax-paying public.

This type of budgeting, when tied in with the departmental reports, will give the best administrative guide both to the department heads, manager and city council in interpreting and reporting the municipal service program of your city.

City and Village Buy Electricity Generated by Atomic Reactor

THE City of Holyoke, Mass., and the Village of Ilion, N. Y., have recently contracted with the U. S. Atomic Energy Commission to purchase electric power generated by an atomic reactor. The reactor, an experimental model designed for submarine propulsion, is located in West Milton, N. Y., just outside Schenectady, and the power it generates will be transmitted to Ilion (population 10,000), which lies 60 miles to the west, and to Holyoke (population 55,000), 75 miles to the east.

The contracts are based on purchase proposals made prior to February 1 in response to an invitation from the Commission. According to the agreements, power will be delivered as it becomes available at three mills per kilowatt hour.

New York CD Enlists Volunteer Radio "Hams"

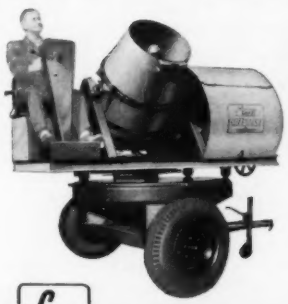
LOCAL Civil Defense directors in New York State are now receiving twice-daily fallout pattern reports, Mondays through Fridays, by short-wave radio. These reports are made possible through the cooperation of "ham" radio operators and through the purchase of the state Civil Defense Commission of 85 short-wave receiving sets for each of the 85 local offices to receive transmissions.

Under this system the fallout pattern report, which is received in code at state CD headquarters from the United States Weather Bureau, is forwarded to a control station in the "ham" network and then fanned out to more than 10 other amateur stations by voice transmission. Six of the amateur volunteers are housewives. The network is arranged geographically so that every local civil defense office may listen in at some point in the relay. The entire transmission takes a little more than 10 minutes.

cut your shade tree spraying costs in half with the **John BEAN 75—ROTOMIST**

Now, you can have low first cost and big capacity in a mist sprayer. The John Bean Model 75 Rotomist combines high volume air discharge — 19,000 cfm — with 400-lb. pump pressure to give you time and labor savings that stretch your budget. With true high pressure spray delivery and the straight-through air flow from the Rotomist's axial flow fan, you get thorough coverage and foliage penetration with a minimum spray materials.

Note these other features: Smooth 360° rotation and 110° vertical pivoting. 75-gal. tank with jet agitation. Oil bath pump with Sapphite lifetime cylinders.



AVAILABLE IN SKID OR TRAILER MOUNTINGS

Both the Model 75-E Rotomist and the larger capacity Model 100-E are available on skids for mounting on a truck bed or as mobile, trailer-mounted units.

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

John BEAN LANSING 4, MICHIGAN SAN JOSE, CALIFORNIA

Division of Food Machinery and Chemical Corporation

Please send me: ( ) New 1956 Rotomist catalog. ( ) Spray Concentration and Gallonage Data. ( ) Mist Sprayer Comparison Table. ( ) Mosquito Control Costs

ATTACH COUPON TO CARD OR LETTERHEAD—GIVE NAME AND ADDRESS

How Zoning Came to American Cities

By JAMES METZENBAUM
Member of the Cleveland Bar

FEW philosophies for the improvement of the public welfare have become so firmly rooted in so short a time as has zoning. It has come to touch the well-being of more than a hundred million within the short span of two score years.

Zoning has helped to restore the original concept of the American form of government—the town meeting theory—for, unlike changes in the average law which are voted by those in authority with no specific notice to those affected, zoning changes may not, generally, be made without actual or constructive notice to all those affected within the neighborhood, with an opportunity for them to be heard. And how zealously do the neighbors contend against revisions which they believe may injure their area!

Good housekeeping for municipalities, as in homes, is—under zoning—finding an orderliness, where industry, business and houses will each have their proper places; each benefiting therefrom, and the community being much the better as a result thereof.

But zoning is not a panacea. It is not a cure-all. It is but a step in the right direction. It must be exercised, in its every phase, with reasonableness.

In the first of the author's three volumes, the origin of zoning is traced back to Napoleon, who issued the first restriction against *use* of property, including the German cities which followed in those steps.

The "kernel" of zoning was first introduced into American soil by the quaintly printed act passed way back in 1692, during the reign of William and Mary, whereby it was provided that:

> **Because of Great Desolation and Ruins having sundry times happened by Fire breaking out in the town of Boston, principally occasioned by Reason of the nearness of Building, being mostly of Timber, and covered with Shingles.**
>
> **BE IT ORDAINED that henceforth, no Dwelling-House, Shop, Ware-House, Barn, Stable, or any other Housing of more than eight feet in length, and seven feet in Height, shall be erected and set up in Boston, but of Stone or Brick covered with Slate or Tile.**

Indeed the very first act passed by the State of Massachusetts, after the forming of the United States, regulated the "Prudent Storage of Gun-Powder within the Town of Boston."

In the wake of such enactments, came the later "Tenement House Codes," the "Sanitary Codes," the "Building Codes," the "Fire Zone Ordinances," the Height Ordinances" and much similar restrictive legislation.

But despite all of these enactments, cities still found that structures were being "tumbled" together—factories were being built in the midst of residences; stores crowded their way in among homes; neighborhoods were being blighted; values being torn down—the kitchen stove was in the parlor; the bookcase was in the pantry; everybody as well as the General Welfare was being injured.

It was coming to be seen that neither building codes, nor fire zones, tenement codes, nor height Ordinances nor other such restrictions could cope with the situation, could save municipalities from injurious "hodge-podge" development.

THIS article, based largely on Mr. Metzenbaum's new, three-volume work, **The Law of Zoning**, has been written at the request of **The American City** in the belief that it will interest many of our readers whose memories do not go back to the origin of zoning in the United States.

A brief review of these three volumes will be found on page 189 of the February 1956 issue of **The American City** magazine.

New York Pioneers

So, at the insistence of the City of New York, a study commission was appointed. It spent six years, from 1910 to 1916, in preparing two volumes of information and data.

It reported that the only feasible way to bring order out of that phase of municipal chaos, was to *integrate* all of the previously established restrictive enactments, and to introduce a *new* regulation—the regulation of the *use* of property, so that municipalities could prescribe certain areas for the *use* of homes, certain districts for the *use* of stores; other parts of a municipality for the USE of industry and factories.

When—as the result of that Study—the City of New York, in 1916, passed the first such American comprehensive regulation of the *use* of property within prescribed areas of that city, it was assailed as offending the state and the federal Constitutions, in that it was "the taking of private property without compensation." But the highest court of New York State held that it was a proper exercise of a municipality's police power" for the General Welfare, and that it did not violate constitutional limitations: *The Lincoln Trust Company and the Steinway Piano Company cases* (1920).

Within a few years, four states—where zoning regulations had been enacted—upheld them, while three states tended in the opposite direction.

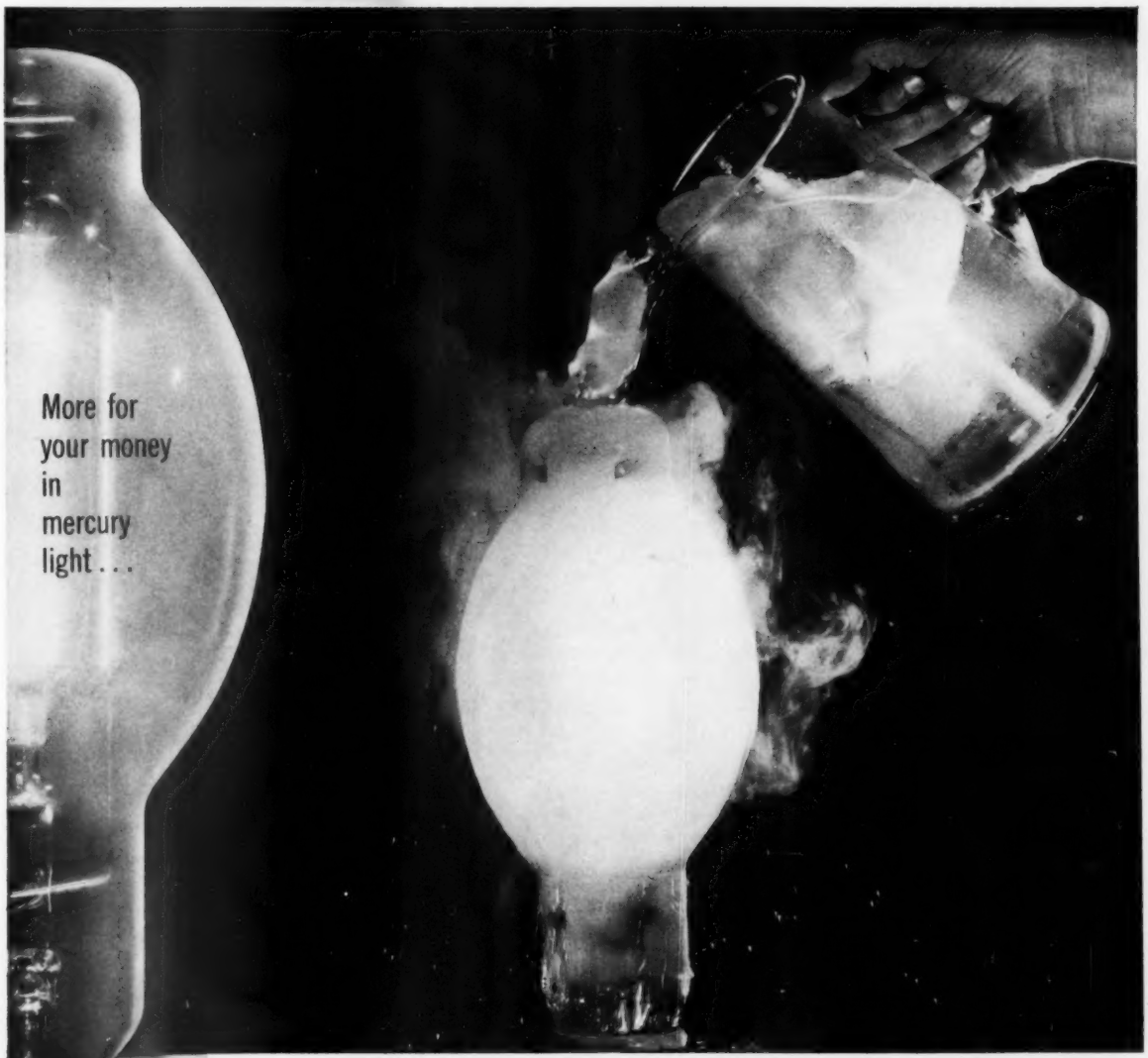
Then, the very able Newton D. Baker—just out of the cabinet of President Woodrow Wilson—was employed by the great industrial, railroad and commercial interests (which *then* stood in fear of zoning) to lay the axe to the very root of the zoning tree.

Vital Decision

It was recognized all over the land that the proceeding would be decisive, for if the federal courts were to have held zoning to be violative of the Constitution of the United States, even all favorable decisions would have fallen like mere dominos standing on end because, obviously, no legislation, though validated by the highest court of a state, could stand if it offended the federal Constitution.

The author of these volumes took the adverse ruling of the lower Federal court, in that case, to the Supreme Court at Washington.

In rendering its decision, the Court speaking through its then Justice Sutherland, held zoning—if *reasonably* exercised—to be within the "police power" of municipalities, for the general welfare, and not offensive to the federal or state constitutions. With that validation, zoning has gone forward by leaps and bounds, in small as well as large municipalities. It now embraces many mere townships as well, by way of "rural" zoning.



ANNOUNCING NEW WESTINGHOUSE WEATHER DUTY(TM) MERCURY LAMPS

Down again go your lighting costs as Westinghouse announces another basic improvement in high-intensity mercury lamps. It's the world's first line of *weather-resistant*, heavy-duty mercury lamps.

Made with hard, tough, thermally stable glass, new Westinghouse WEATHER DUTY Mercury Lamps can be burned outdoors unprotected in rain, snow or sleet with no risk of cracking. And they can be burned indoors in ventilated fixtures with no danger of shattering under water drops entering through the ventilating openings. Moreover, they are highly resistant to mechanical breakage and to the corrosive effect of industrial fumes.

Thus in any type of installation—indoor or outdoor—Westinghouse WEATHER DUTY Mercury Lamps save you money three new ways. First, by eliminating the need for protective shields and permitting the use of cheaper fixtures. Second, by doing away with costly shield maintenance. And third, by releasing the large amount of light wasted by dirty shields.

WEATHER DUTY Mercury Lamps are the latest example of how Westinghouse gives you "*more for your money in mercury light.*" Now available types E-H1-WD, J-H1-WD, A-H12-WD, C-H12-WD, A-H15-WD and B-H15-WD.

WESTINGHOUSE GUARANTEES the service life of all its widely used types of quartz mercury lamps. For full details call your Westinghouse Lamp Representative—or write Westinghouse Lamp Div., Dept. AC3, Bloomfield, N. J. "You can be sure if it's Westinghouse."

WATCH WESTINGHOUSE!

*WHERE **BIG** THINGS ARE HAPPENING FOR **YOU***

Planning better roads

by **INTERNATIONAL SALT COMPANY, INC.**—America's largest producer of salt

Stabilizing Base Course with Rock Salt Is Efficient, Economical

An increasing number of states and highway departments are now using rock salt to stabilize road base course. The main reason for this is that rock-salt-stabilization gives the base course complete, long-lasting protection against extremes of temperature and weather. Rock salt actually combines with soil to give it added density, water-tightness, and resistance to frost. Result: roads that stand up longer . . . and need less maintenance.

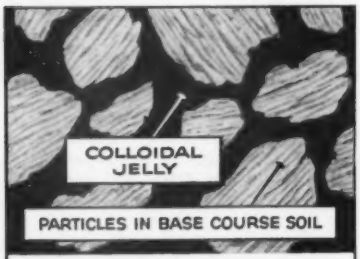
Rock salt provides this remarkable stabilization in three different ways—conforming to severest weather conditions. Here they are:

During heavy rains the salt and clay in the stabilized soil form a colloidal jelly. This jelly acts as a barrier to the seepage of further moisture from any direction. As a result, the stabilized base is actually sealed off from water damage.

In extremely dry weather, salt in the stabilized base recrystallizes and holds the soil fines in place. Thus, the original density of the soil is maintained. This recrystallized salt also shields the road base from heat, helping to preserve necessary moisture in the lower layers. Partially recrystallized salt also fills the natural voids that occur in road base during temperature changes. This is another way "potholing" is prevented.

In freezing weather, frost cannot readily penetrate rock-salt-stabilized soil. This is because salt acts as an antifreeze, lowering the soil's freezing point. With salt-stabilized base courses, the occurrence and severity of frost heaving are greatly reduced—and resultant surface breakup is minimized.

Economical, too. Another important reason for the growing popularity of rock-salt-stabilization is its low cost. Rock salt itself is an inexpensive and readily available material—and applying it to roads requires no special equipment. This method of stabilization can generally be accomplished quickly and conveniently, too—thus reducing equipment and labor costs. And after stabilization with rock salt, road maintenance expenses are often substantially decreased.



Rock Salt on the Job. Enlarged diagram shows how rock salt forms a colloidal jelly with base-course soil. This protective colloidal jelly is one of the important features of salt-stabilized roads.

ROCK-SALT-STABILIZATION PERMITS ROADS TO BE BUILT IN STAGES

This is an important feature in many road-building or reconstruction programs. Because the salt-stabilized base course is hard, smooth, and long-wearing—it can successfully be used as the wearing course for as long as several years. When the bituminous or concrete wearing course is finally applied, the base course provides all the advantages detailed here.

This heavily traveled gravel road in the Midwest was stabilized with Sterling Rock Salt, produced by the International Salt Company. Road surface is reported to be hard, smooth, and virtually dustless. It now requires only infrequent maintenance.

Free Technical Assistance on Road Stabilization

International Salt Company will be glad to help you work out an effective, economical rock-salt road-stabilization program for your system. There's no cost or obligation. Just contact your nearest International sales office.

For further technical information on rock-salt stabilization, write for International's free series of booklets "Better Highways." Address: International Salt Co., Inc., Scranton 2, Pa.

Sales offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; and Richmond, Va.

FOR ROADS, INDUSTRY, FARM, AND HOME—
STERLING SALT
PRODUCT OF INTERNATIONAL SALT CO., INC.

Construction Contracts Zooming

THE TOTAL of contracts awarded for future construction in 37 states soared to $2,382,000,000 in March, reports F. W. Dodge Corporation. This is the highest total for any March in history—12% above March of last year.

Contrary to predictions made for 1956, residential awards held their own (in comparison with other types of building), being 12% ahead of March 1955 and the highest for any month in history. As Thomas S. Holden, vice chairman of F. W. Dodge Corporation, summarized these statistics: "The lesson is that none of us comprehends quite fully the present growth potentials of the U. S. economy. As I see it, current growth rates are based not merely on the country's amazing productivity but also upon a confidence in the nation's future that is very widely held by people in general. Their construction commitments prove their belief in a future of expanding opportunity."

L. A. Smog Gets Radio-Alert System

SMOG WARNINGS in Los Angeles are taking on the characteristics of a civil-defense alerting system as a result of action by the county's Air Pollution Control Board recently.

The action requires installation of selective radio receiver facilities by industry and local governmental agencies to receive smog alert warnings. It links directly more than 1,000 air-polluting industries with a radio broadcast system at the Air Pollution Control District center and cuts to less than two minutes the time required for announcing alerts. It embraces a hookup of radio and teletype facilities over the entire Los Angeles area with the downtown district headquarters.

The operation of the system will be similar to that used by many FM stations. The APCD will transmit several tones which together will comprise a code signal. Receivers at the industrial plants will be triggered for their respective tone groups so that the speaker will switch on, a bell will ring, and the APCD announcer will be heard.

By dividing industry into coded groups, APCD expects to obtain control over the exact type and area of pollution responsible for specific smog conditions.

AUTOMATIC UNDERGROUND SEWAGE LIFT STATION

using weil

Heavy Duty Vertical Screenless Sewage Pumps

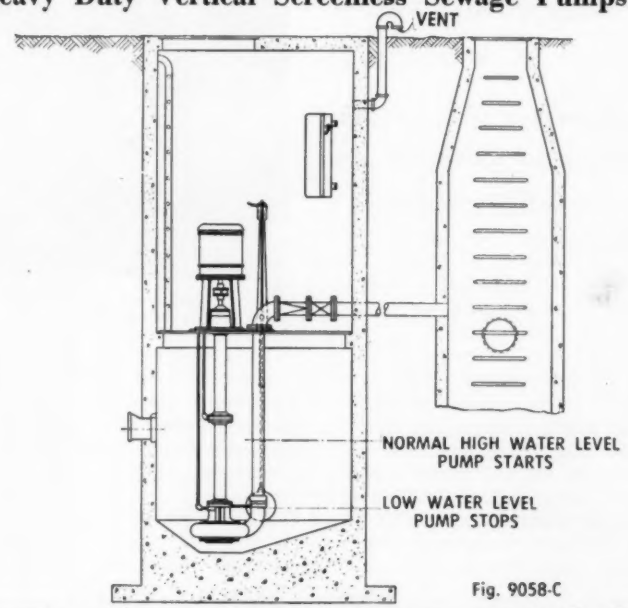


Fig. 9058-C

Automatic underground lift stations are required when sewage or waste from a group of industrial buildings or residences cannot drain by gravity into the main trunk sewer or treatment plant. An economical installation is this submerged style ejector operating in a wet pit. The motor and electrical controls are mounted above the pump cover. Either single or duplex pumps may be used. Provision for increased loads can be made by installing a single pump in a pit of sufficient capacity to allow addition of a second pump at a later period. Pumps can be supplied with totally enclosed or explosion proof motors and moisture proof or explosion proof control where conditions require.

The weil Heavy Duty Vertical Sewage Pump is supplied with the special Non-Clog Impeller (Fig. C-9001). This combination supplies the ideal method of pumping sewage or other unscreened liquids containing solids. This impeller is the most important part of this screenless non-clog sewage pump. This unit supplies the ideal method of pumping sewage or other unscreened liquids containing solids because the efficiency of this type of unit is measured by its ability to pump waste without trouble from clogging.

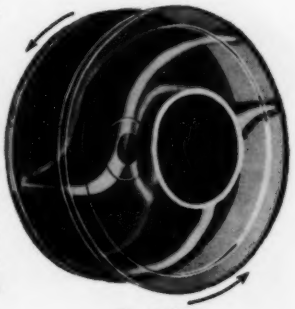


Fig. C-9001

Send for Bulletin C-900. Special engineering data and requirements for underground lift stations will be supplied upon request.

weil PUMP COMPANY

1518A No. Fremont St., Chicago 22, Illinois

Record Drive-Chain Order for Los Angeles Sewage Plant

Replacement settling-tank chains have improved wearing, corrosion-resistant qualities

A forklift truck operator heads for the warehouse with part of a carload of Moline long pitch pintle chain.

ONE of the biggest single shipments of drive chains for a sewage treatment plant was received recently at Los Angeles' big Hyperion sewage treatment plant. The chains, described as long-pitch pintle, total nearly 1½ miles, and are manufactured of metals of special composition to provide improved corrosion resistance. They are a product of the Moline Malleable Iron Company, St. Charles, Ill.

The chains will be used to drag redwood sludge-collecting flights the length of the settling-tank floors to move the sludge to a sump at the inlet end. Four underground pumping plants then force the sludge to digestion tanks. The flights also ride on the water surface on their return trip, carrying grease and floating material to grease skimmers at the opposite end of the tanks. The new shipment of chains replaces those chains installed when the plant was constructed.

The Hyperion sewage treatment plant has eight

It's True There are Other "Good" PIPE DETECTORS

and EACH ONE WILL PERFORM ALL THESE JOBS:
- Detect, trace and center pipes, cables, etc.
- Estimate their depth
- Separate parallel pipes, cables, etc.

Model 505 Pipe Detector

But... Do They Have ALL These "505" Features

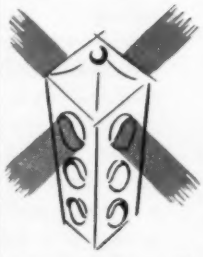
1. ALUMINUM CASE shields the loops from outside interference and is light — durable — repairable.
2. BUILT-IN BATTERY TESTERS plus 67½ V batteries insure maximum service, more efficiency, more power.
3. QUICK-ACTION ALUMINUM HANDLE set up in seconds for one man operation.
4. LIFETIME GUARANTEE assuring reliable performance for the entire life of instrument.

Also Available: Model 505-C Combination Pipe-Leak Detector

Get the complete "505" story — write Dept. 54

Detectron

COMPUTER-MEASUREMENTS CORP.
Utilities Instrument Division
5457 Cleon Avenue, North Hollywood, Calif.



EL-TEC
RADIO CONTROLLED TRAFFIC SIGNALS

Provide Safe Access For . . .

ALL EMERGENCY VEHICLES
- FIRE EQUIPMENT
- POLICE CARS
- AMBULANCES
- CIVIL DEFENSE —and Protect the Public and Private Vehicles

AVOID INTERSECTION TRAGEDY

Many Installations Now Being Completed In Various Cities.

Literature and Surveys Furnished on Request.
Distributor Inquiries Invited.

E P I

Electronic Protection Inc.

Subsidiary of Standard Coil Products Co., Inc.
2085 N. Hawthorne Ave., Melrose Park, Illinois

The Only FCC Approved Equipment for Emergency Vehicle Traffic Control

settling tanks. Each tank is 300 feet long, 56½ feet wide, and is covered by a concrete slab. They are designed to retain the sewage about 90 minutes to permit the solids to settle and the grease to rise.

The Hyperion plant, located on an ocean-front site of 76 acres, went into operation in 1950, and was designed to receive and treat an average flow of 245 mgd (million gallons daily). The treated effluent is discharged 1 mile from shore through a submarine outfall in Santa Monica Bay.

Present plans for expansion of the Hyperion plant place greater reliance on the primary settling basins and call for discharge through an outfall to be located 5 miles offshore.

Colored Slides Give Life to Annual Report

THE CITY OF WICHITA, Kans., is submitting its annual report on city government to its citizens through a projector. The report consists of a series of 143 color slides showing many facets of city government. A taped 30-minute commentary accompanies showing of the slides. This type of report is being enthusiastically accepted by Wichita citizens.

Madison F. West, director of Research and Information, reports that interest in the slides has grown daily. More than 5,000 people in Wichita, members of organized groups, saw the slides during the first three months of the year. He limits the showing to four trays of 36 slides in each.

In the accompanying photograph, the annual report on city government is being presented to a group of interested Wichita women by Mrs. Ladene Ackerman of the Research and Information Office. The projector in use is a Kodak Signet 500; the slide equipment consists of an Airequipt changer with magazines.

ADNUN JR. ADVANTAGES

GIVE SUPER HIGHWAY QUALITY TO SMALL PAVING JOBS

Oscillating Screed
Continuous Course Correction
Breaker Bar • Power to Maneuver
Dual Controls • Simple Design
Demountable Trailer Hitch

● Here's a tow-type black top paver that can give you tight longitudinal joints, continuous level courses of even thickness and improved density, so every bituminous paving job will have the same high quality as a rigidly specified superhighway. With a Blaw-Knox Adnun Jr. to give this quality paving, you can economically pave such small jobs as driveways, parking lots, garage floors that only a small compact paver can handle, as well as do some specification jobs such as streets and roadways. The Adnun Jr. will also spread rock for base course as well as hot or cold asphaltic concrete. With its own power, the Adnun Jr. can maneuver between courses to save truck time. For complete information see your Blaw-Knox Distributor.

Adnun Jr. lays smooth, even finish course on filling station parking lot.

50th Anniversary BLAW-KNOX 1906-1956

BLAW-KNOX COMPANY

CONSTRUCTION EQUIPMENT DIVISION

30 Charleston Avenue • Mattoon, Illinois

Zoning and Planning Notes

Edited by NORMAN WILLIAMS, Jr.

Permitted Uses in Commercial Districts

NEW YORK. *Town of Eastchester* v. *Noble*, 148 New York Supplement (2d) 592 (Supreme (lower) Court, January 3, 1956).

MASSACHUSETTS. *Kraft* v. *Board of Appeals of Lynnfield*, 132 North Eastern (2d) 163 (Supreme Court, February 10, 1956).

In the *Eastchester* case, the retail business district regulations listed certain specific permitted uses. The operator of a moving and storage business was using four vacant lots for outdoor storage of moving vans, trailers, and large packing boxes. It was argued that at least for one part of the lot—which had previously been divided into two districts—such a use was authorized as a valid non-conforming use because it had been permitted under the previous ordinance. However, the Court held that the use in question was not permitted, as a retail business use or otherwise, in either of the two previous districts.

The *Lynnfield* case involved an application to erect a building for the baking and retail sale of doughnuts and other bakery goods in a general business district on the Newburyport Turnpike. The uses permitted in a general business district included a "store for the conduct of a retail business," a "drive-in retail establishment," and "any other retail business or service establishment similar to the uses herein before listed." However, a bakery plant was permitted only in a commercial district. The Court held that the proposed establishment was properly permitted by the Board of Appeals, subject to specified conditions, under the first two above-quoted provisions. The problem here was that the Court had to assign a given use to one of two overlapping categories which were treated differently in the ordinance.

Inter-Municipal Contracts for Sewage Disposal

CALIFORNIA. *City of Vernon* v. *City of Los Angeles*, 290 Pacific (2d) 841 (Supreme Court, December 6, 1955).

This was another decision in the long controversy and litigation over the disposal of sewage originating in Vernon, a community located wholly within the City of Los Angeles. A series of contracts (starting back in 1909) provided for the use of Los Angeles sewers for this purpose. Several major decisions relating to the controversy have come down in recent years. This case involved the attempt of Vernon to stand upon its rights, under earlier contracts, to have Los Angeles accept sewage under the terms set forth in those contracts. However, the Court held that performance of these contracts by Los Angeles had become impossible because changed conditions had brought a great increase in costs. The chief interest of the opinion lies in the discussion in both majority and dissenting opinions of a relatively modern legal doctrine, i.e., that performance of a contract may become impossible because of increased costs due to unforeseen conditions.

Religious Uses In Residence District

NEW YORK. *Community Synagogue* v. *Bates*, 147 New York Supplement (2d) 204 (Appellate Division, December 19, 1955).

In this case, a synagogue owned a 2½-acre plot of land in a single-family district, with a large mansion and a number of other buildings and facilities, and sought to use it for religious purposes. The local zoning ordinance permitted "churches for public worship and other strictly religious uses" in the district, provided a special permit was obtained. A variance was also sought to authorize non-conforming yard depths and other features. The Court held that a permit was properly denied, on the grounds (inter alia) that the proposed use included other than strictly religious purposes, that the parking areas would be a hazard, and that so large a tract was not needed. One judge dissented on the ground that a special permit for a religious use should be available as a matter of right, without a special permit.

Variances in New Jersey

NEW JERSEY. *Skaf* v. *Zoning Board of Adjustment of the City of Asbury Park*, 113 Atlantic (2d) 843 (Appellate Division, April 28, 1955).

In this case, a variance was sought to permit a somewhat irregular lot in a two-family residence district in Asbury Park to be used for a women's club. The Court reviewed the law on variances under the New Jersey zoning enabling act, and held that no variance was justified. While this lot was admittedly different in size and shape from others in the district, the Court held that there was no indication that such difference had any relation to the lot's suitability for conforming uses under the zoning ordinance. Moreover, while the purposes of the club were admittedly beneficient, the Court held again that the basis for special treatment must "inhere in the land" instead of in the proposed use.

> "It obviously cannot mean that merely because a zoning board believes the activities of a particular organization are for the general welfare of the community (without regard to where it might be housed) it may lawfully, for that reason only and without basis in any peculiar relation between such activities and the nature and location of the specific plot, grant it special dispensation from the ordinance restrictions against use of land in a particular zone for such purposes."

Medical Offices Within High-Density Multiple Dwellings

NEW YORK CITY. *People* v. *960 Park Avenue Corporation*, 145 New York Supplement (2d) 190 (Appellate Division, October 25, 1955).

In this case, the New York City zoning resolution permitted medical offices within residential buildings, but provided that in multiple dwellings such offces should be permitted only:

> "(1) on the street floor thereof, (2) on the floor immediately above the street floor only if there be access to such doctors' offices from other than the public hall, and (3) on the first floor immediately above the street floor where such use existed on January 1, 1948."

A group of doctors had a suite of medical offices on the 12th floor of a multiple dwelling on Park Avenue. None of these doctors lived there. In an action by the City to enforce the zoning regulations, it was argued in reply that the enabling legislation authorized the Planning Commission (which initiates zoning amendments in New York City) to regulate the location of specific types of buildings and the location of trades and industries, but not to regulate the use of buildings once erected, except in connection with trades and industries. The Court held that this was much too literal-minded a reading of the statute, and that the Commission had the power to regulate uses within the buildings after their erection.

> "It obviously was the intent of the statutes to cover not only the initial location of buildings designed for specific uses but to regulate such uses beyond initial construction."

Unquestionably, any other holding would have paralyzed zoning in New York City. On the other hand, the archaic wording of the relevant enabling statute created a situation where the Court had to interpret the language rather broadly to reach this result.

Church Adjoining Apartment Building in Duplex District—Transition Zoning

ILLINOIS. *Schwartz* v. *Congregation Powolei Zeduck*, 131 North Eastern (2d) 785 (Appellate (intermediate) Court, February 1, 1956).

The Chicago zoning ordinance provided that in a duplex residence district (as in a single-family district) certain additional uses are permitted "on a lot . . . adjoining an apartment house." These additional uses included churches and schools. In this case a school and synagogue, located across an alley from an apartment building and apparently in a different district, was held to be "adjoining" such building.

This filmsort jacket will hold Recordak copies of 28 legal size documents or 60 letters

Best way to keep cumulative records

See how the use of Recordak Microfilming and Filmsort jackets trims your costs

Cuts copying costs. You can copy documents for a fraction of a cent apiece—*the lowest per-picture cost today*—with a Recordak Microfilmer that fits your requirements. All told, there are seven models designed for copying office records; *plus* four Recordak Micro-File machines for larger documents. One is just right for your needs *and budget.* Prices start at $550 when you buy . . . and $17.50 per month when you rent.

Cuts filing costs. Recordak Microfilm copies—inserted in Filmsort jackets—can be filed at the fingertips in a fraction of your present "paper record" space. Film copies of additional documents can be slipped into place quickly, enabling you to centralize microfilm copies by subject. You'll eliminate many familiar headaches: misfiling, soiling, tearing—to name a few. One Filmsort jacket like the one above (4″ x 6″) will hold 60 Recordak Microfilm copies of letter-size documents, photographed at 24 to 1 reduction ratio. Cost is approximately ⅓ cent per picture, including the jacket. Prices for these sturdy acetate jackets are most reasonable, vary according to sizes and quantities ordered.

NOTE: Recordak is an authorized Filmsort dealer.

RECORDAK

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming and its application to government routines

"Recordak" is a trademark.

MAIL COUPON TODAY

for full story on uses of Recordak Microfilming and Filmsort cards by government agencies.

RECORDAK CORPORATION
(Subsidiary of Eastman Kodak Company)
415 Madison Avenue, New York 17, N. Y.

BB-5

Name_____ Position_____

Agency_____

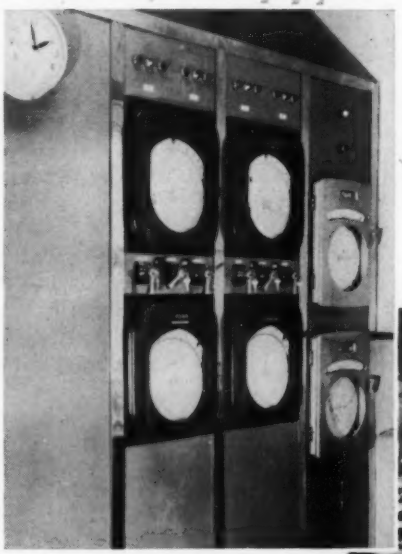
Street_____ City_____ State_____

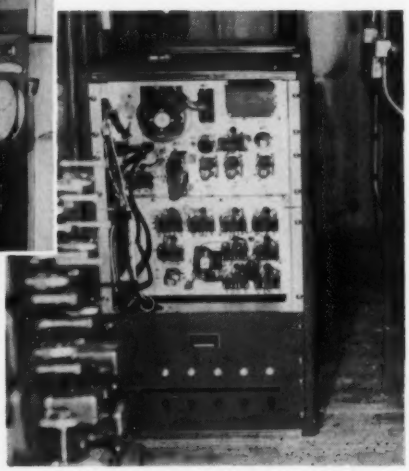
NOW AUTOMATIC ECONOMICAL OPERATION FOR WATER AND SEWAGE PLANTS

NEW TALLER & COOPER REMOTE & LOCAL CONTROL SYSTEMS

- **Automatically supervise and control pumps, valves, pressures, flows and other functions over a single pair of wires**
- **Maintain standards of quality with maximum efficiency at lowest cost**
- **Provide automatic continuous and permanent record of every part of the system's operation**

Taller & Cooper Remote and Local Control Systems are designed to offer instantaneous confirmation of an unlimited amount of executed plant operations. Not only for water supply, but also for chemical and material supply systems in industry, Taller & Cooper systems fulfill the need for accurate monitoring, control and centralized information concerning feed and flow installations actuated from a central office, or operated locally, manually.





A typical forward-looking water program which has found its profitable answer in Taller & Cooper Remote Control Equipment. Graphically showing at all times are water pressures, levels, flows and condition of pumps and tanks in all field stations.

Write today for illustrated folder—503-B, detailing on actual case history and experience records with T&C Equipment.

TALLER & COOPER, INC.

ENGINEERS • MANUFACTURERS

75 Front Street, Brooklyn 1, N. Y.

- Control Equipment & Systems • Wind Tunnel Instrumentation
- Data Reduction • Data Handling • Toll Collection Systems
- Digital Computers • Special Purpose Printers & Instrumentation
- Chemical Analyzers & Control Equipment

Contributed by WILLIAM JABINE, Attorney

Zoning Briefs

California

RESIDENCES BARRED IN HEAVY INDUSTRY ZONE. Application made for land use permit to create residential subdivision for 254 houses in area zoned for heavy industry. Court held that character of neighborhood—chemical plant, dredging company. railroads, etc.—justified denial of permit because of threat to health and safety, saying that there was nothing unreasonable or arbitrary in preventing "higher use," and that local zoning authorities exercised proper discretion in restricting area to heavy industry. Roney v. Board of Supervisors of Contra Costa County, 292 P.2d 529 (Court of Appeal, 1st Dist., Div. 2. Jan. 30, 1956).

Connecticut

LAND TAKEN FOR HIGHWAY RESULTS IN HARDSHIP SITUATION. After unsuccessful attempts to acquire new liquor store site within 750 feet of old premises condemned for new highway, owner bought new site about 1,150 feet from one existing liquor establishment and less than 1,500 feet from another. Ordinance prohibited new outlet within 1,500 feet of existing outlets, but owner sought variance. Court upheld validity of variance on ground that it was exceptional case of hardship. Mabank Corporation v. Board of Zoning Appeals, 120 A.2d 149 (Supreme Court of Errors and Appeals, Jan. 24, 1956).

FAILURE TO REFER TO ZONING COMMISSION INVALIDATES ACTION AT TOWN MEETINGS. New site for Guilford town dump bought and put into operation without being referred to zoning commission. When neighbors protested, town authorities relied on facts that town meeting had approved site and voted funds to buy it, and that another town meeting had voted down resolution to close new dump. Court held that reference to zoning commission was mandatory and that failure to refer made it impossible to take legal action at town meetings. Jeschor v. Town of Guilford, 120 A.2d 419 (Supreme Court of Errors and Appeals, Jan, 27, 1956).

Florida

THREE-FOURTHS VOTE OF ENTIRE COMMISSION REQUIRED FOR ZONING CHANGE. Neighbors in sufficient numbers to comply with provisions of ordinance objected to zoning change from residential to commercial, thus permitting construction of business building. Change had been made by City Commission at meetings attended by four or five commissioners, and passed by three voting in favor of change. Law required ¾ majority. Court held that ¾ majority meant ¾ of entire Commission, and not merely ¾ of quorum present. Change nullified. Streep v. Sample, 84 So. 2d 586 (Supreme Court, Jan. 11, 1956; Rehearing denied, Feb. 2, 1956).

Illinois

PROTESTING NEIGHBORS SUCCESSFUL: AWARDED COURT COSTS. Neighbors sought injunction to prevent violation of zoning ordinance by property owners wishing to move two houses to positions in back of existing houses. Perpetual injunction, including order to desist within 60 days, granted and costs of $1,000 for attorney's fees, etc., awarded to complainants. Award contested on constitutional ground that it granted special privileges and immunities, but Court upheld award. Pasfield v. Donovan, 131 N.E. 2d 504 (Supreme Court, Jan. 19, 1956).

Louisiana

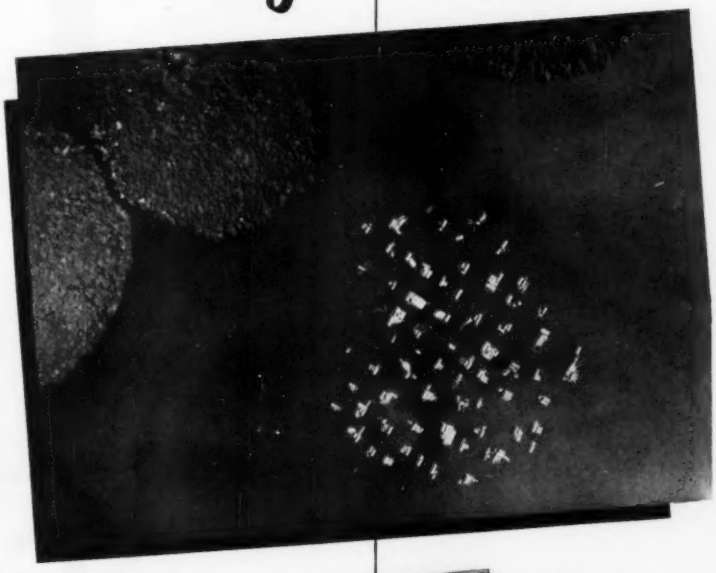
CHANGE TO PERMIT SHOPPING CENTER APPROVED. Area rezoned from one-family district to "neighborhood" commercial district permitting construction of shopping center. Court upheld change over objections of neighboring residents who claimed that, among other things, insects and rats would be attracted. Weight placed on testimony regarding growth of city and necessity for shopping facilities with ample parking spaces. Archer v. City of Shreveport, 85 So.2d 837 (Court of Appeal, 2d Circuit, Feb. 2, 1956; Rehearing denied, Mar. 2, 1956).

Wisconsin

PREAMBLE OF ORDINANCE MAY BE USED AS GUIDE. Sand and gravel pit opened for operation in agricultural area without permit for such operation. Preamble of zoning ordinance relied upon by local authorities in insisting on application for permit. Court held, that although preamble cannot extend scope of ordinance, it may be used as guide in construing ordinance. Decision 4 to 3. Dissenting opinion argued that preamble simply set forth purposes hoped for and not standards to be followed. Smith v. City of Brookfield, 74 N.W.2d 770 (Supreme Court, Feb. 7, 1956).

Here is a Rare City!

No planning problems,
No traffic or parking problems,
No sewer problems,
No zoning problems!



Officials of this small South American fishing village face few of the problems of a modern city or urban county in the United States.

Locations of new right-of-ways, freeway planning, integration of new subdivisions, establishment of civil defense plans, questions of property reassessments, organization and administration of all public services, zoning changes...these are just some of the problems faced daily by city and county officials.

No sound planning can be undertaken without modern photographic maps of an urban area. Fairchild is compiling such maps regularly; they show every visible feature, not merely those which have been surveyed in.

No sound engineering project of any magnitude can be designed or completed without accurate topographic maps. Again, Fairchild is compiling these regularly for many city clients.

Fairchild mapping projects for 1955-1956 include 19 American cities. Write or call your nearest Fairchild representative to see how such a desirable program can be started for your city.

This 24-page booklet explaining Fairchild techniques is yours for the asking. Write for it today.

FAIRCHILD
AERIAL SURVEYS, INC.

Los Angeles, Calif.:
224 East Eleventh Street
Long Island City, N. Y.:
21-21 Forty-First Avenue
New York City, N. Y.:
30 Rockefeller Plaza
Chicago, Ill.
111 West Washington St.
Atlanta, Ga.
333 Candler Bldg.
Boston, Mass.:
New England Survey Service, Inc.,
51 Cornhill
Seattle, Wash.:
Carl M. Berry, P. O. Box 38, Boeing Field
Bogota • Caracas • Lima • Rio De Janeiro

it's Moline

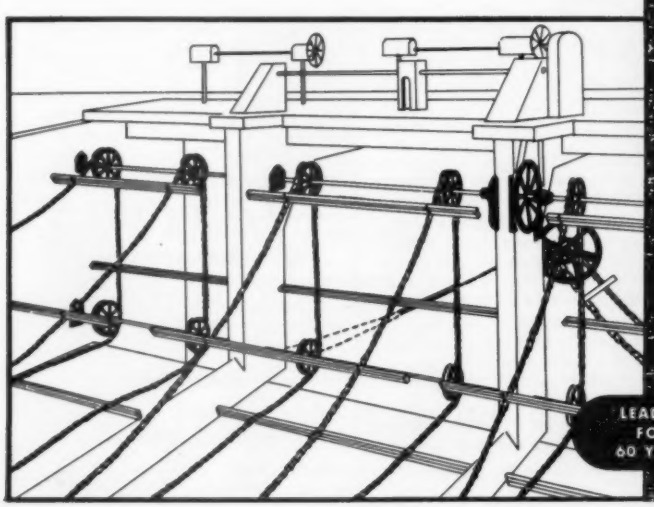
long pitch pintle chain for sewage treatment plants...

Extra strength with minimum weight is one reason why Moline Long Pitch Pintle Chain is so universally used in sewage treatment plants. It's assembled with forged "T" head pins and cotters.

Special analysis metals with improved corrosion resistance are made in this pattern.

Write for information and prices or phone your local Moline representative.

IN GRIT WASHERS,
SLUDGE COLLECTORS,
SCUM REMOVERS,
SETTLING TANKS AND
OTHER UNITS



LEADERS FOR 60 YEARS

Moline CONVEYOR Chains

MOLINE MALLEABLE IRON CO.
ST. CHARLES, ILLINOIS
LICENSED MANUFACTURERS OF PROMAL CHAINS

Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Auctioneers—Occupation Tax Valid

Occupation tax levied against auctioneers was valid because both uniform as to class of subjects and not disguised as licensing measure. *Freeman* v. *City of Philadelphia*, 116 A.2d 349 (Pa., Super., July 21, 1955).

Cemeteries—Expropriation for Street Widening Valid

Municipality had right to expropriate cemetery for badly needed street widening purposes, where property was in ruin, and diverting expropriation would cause city great loss and inconvenience. *City of New Orleans* v. *Christ Church Corporation*, 81 So.2d 855 (La., June 30, 1955).

City Officers—Conviction For Interest in Contracts

In conviction for violation of City of Baltimore ordinance prohibiting officers from being engaged or concerned in any contract for work done or to be done on an account of city, held, where Off-Street Parking Commissioner approved contract which was paying him a fee, evidence sufficient to show violation. *Jones* v. *States*, 115 A.2d 273 (Md., June 22, 1955).

City Officers—Right to Hold Office Where Previously Convicted of Felony

Town Commissioner who had been convicted 20 years previously of forgery but who had obtained restoration of citizenship under restoration statute was not disqualified for office by reason of conviction. *Bryant* v. *Moore*, 279 S.W.2d 517 (Tenn., May 6, 1955).

City Property—Restriction to Residents By Deed Valid

Where town accepted gift of park property by deed restricting use of land to property owners and residents of park district, held, such restrictions were valid and enforceable. *Atlantic Beach Property Owners Association* v. *Town of Hempstead*, 142 N.Y.S.2d 496 (Sup.Ct. Nassau Cty., April 19, 1955).

Firehouse—Refusal of Use of Auditorium Valid

Fire District Commissioners of Town of Mamaroneck could properly refuse to issue a permit for the use of the fire house auditorium by political organization for public meeting to be "educational for public interest," and such refusal was not deprivation of applicants' constitutional rights. *Application of Hooker*, 143 N.Y.S. 2d 750 (Sup.Ct. Westchester Cty., July 14, 1955).

Golf—City Not Liable For Injury to Player

Action brought by golfer against city and golf ball driver for injury received when city employee-starter directed driver to tee off and golf ball struck plaintiff on another fairway. Complaint dismissed as golfer assumed the risks of the game and driver was under no obligation to warn players on contiguous fairways. *Trauman* v. *City of New York*, 143 N.Y.S.2d 467 (Sup.Ct. Bronx Cty., June 16, 1955).

Housing—City Authority Only Agent Of Federal Government

In suit against United States by Administrator of two children killed in explosion of hot water tank in Federal Housing Project, held, City Housing Authority was not lessee of project operating it as independent contractor, but was managing agent for United States and action could be maintained against United States. *Schetter* v. *Housing Authority of the City of Erie*, 132 F.Supp. 149 (W.D. Pa., June 13, 1955).

Off-Street Parking—Revenue from Present Facilities Valid Pledge for Bonds for Additional Facilities

City could pledge revenue from existing parking facilities for payment of principal and interest of revenue bonds to be issued for acquisition of additional off-street parking facilities without submitting the issue to freeholders as no ad valorem tax or pledge of city credit was involved. *Lynn* v. *City of Lauderdale*, 81 So.2d 511 (Fla., June 20, 1955).

Parking—Hotel Guests Right To Load Upheld

Delegation of power to erect "no parking" signs to city manager is valid, but parking regulation that prevents hotel guests from parking to load or unload baggage in front of hotel entrance is infringement on hotel's rights as abutter. *Raskin Hotel Co.* v. *City of Cincinnati*, 126 N.E.2d 922 (Ohio App. Hamilton Cty., July 12, 1954).

Streets—Dedication By Builder Includes Water Mains

Builder's dedication of street to municipality constituted surrender of such right or interest as builder had in water mains, and there was no taking of property for which damages were assessable in condemnation proceedings, and, therefore, builder could not validly require a city to institute such condemnation proceedings. *Haven Homes* v. *Raritan Township*, 116 A.2d 25 (N. J., June 27, 1955).

Streets—Defect Causes Explosion—Contributory Negligence

In homeowner's action against city for damages resulting from an explosion which occurred when a gas line broke because of vibrations set up by vehicles hitting hole in street which city allegedly neglected to repair, held, question of homeowner's contributory negligence in failing to notify city of condition of street was properly for jury. Decision for city affirmed. *Good* v. *City of Pittsburgh*, 114 A.2d 101 (Pa., May 23, 1955).

Streets—Closing by Exchange of Property Valid

City of New Orleans could exchange property resulting in closing of street and statute giving city right to do so was controlling, and not charter provision authorizing closing of streets, but even if charter did control, vote of five members present, of eight man council, constituted necessary two-thirds vote. *Doll* v. *Flintkote*, 79 So.2d 575 (La., March 14, 1955).

Streets—Injury from Low Power Line—City Liable

Where occupant of truck brought action against city for injuries sustained when he was struck in the mouth by power line extending over road while standing in rear of truck to steady load of hay, held, negligence of city in permitting the line to remain at a height less than 12 feet, 6 inches above the road was jury question and judgment against city affirmed. *Dennis* v. *City of Albemarle*, 87 S.E.2d 561 (N.C., May 25, 1955).

Tax Exemptions—Area for Private Social Affairs Not Recreation Center

Portion of municipal authority's building that was leased to city and rented out for private social affairs is not considered a tax exempt "recreation center." *Appeal of Municipal Authority of Borough of West View*, 113 A.2d 307 (Pa., April 18, 1955).

Tax Exemptions—Residence for Ministers Engaged in Teaching

Building owned by religious corporation that served as residence for ministers who were engaged in teaching in religious school two miles away was held not to be "actually and exclusively used in work of corporation" under statute and therefore not exempt from taxes. *Township of Teaneck* v. *Lutheran Bible Institute*, 112 A.2d 745 (N.J.Super.Ct.App.Div., March 17, 1955).

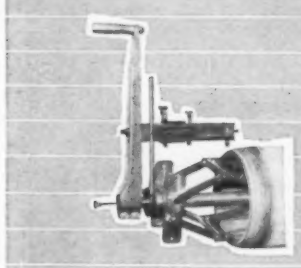
Telephone Rates—Injunction to Prevent Enforcement Denied

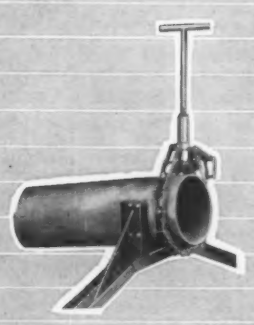
In suit by telephone company to enjoin enforcement of city ordinance prescribing rates to be charged for local exchange service in city, held, temporary injunction was properly denied on ground that (1) plaintiff did not show that its net operating income was less than a fair return on its investments within city, (2) company made no attempt to separate valuation of rural telephones and property from valuation of property of exchange, as shown by exhibits, and (3) did not apportion total operating expense and net operating income to rural property. *General Telephone Company of the Southwest* v. *City of Eden*, 281 S.W. 379 (Tex.Civ. App., June 29, 1955).

Water—University to Receive Without Charge As Inducement

City could validly agree to furnish water to university without charge for about 45 years as an inducement for university to locate in city. *City of Gainesville* v. *Board of Control*, 81 So.2d 514 (Fla., June 22, 1955).

PLUMBERS — CONTRACTORS — WATER AND SEWAGE WORKS OFFICIALS





"Spring Load" Tools will Save You Time and Money

Thousands of plumbers, and contractors, water and sewage department officials, public works department heads and others specify "Spring Load" because they know these tools do the job quicker and with less maintenance. To save time is to save money . . . and you can do it with Spring Load cutters, tenon tools and vises. The right tool for every job is a good investment.

MODEL B TENON TOOL

4" to 8" pipe . . . $195.00 10" to 20" pipe . . . $315.00

Recommended by leading asbestos-cement pipe manufacturers, the Model B is the only tool which will make all the cuts and profiles necessary for modern asbestos-cement pipe installations. Saves engineering time by eliminating the need for figuring and specifying short lengths.

- Ring-Tite Couplings
- Fluid-Tite Couplings
- Simplex Couplings
- Roto-Split Flanges
- Poured Flange Assembly
- Tapered Couplings
- Making Closures and End Facing

Completely automatic feed and quick release make the Model B the fastest tenoning tool developed to date. Simply change the cam plate to adapt the tool for cutting any type profile.

TENON TOOL ALSO AVAILABLE IN A STANDARD MODEL FOR SIMPLEX COUPLINGS ONLY — 4" to 8" pipe $90.00 10" to 20" pipe $172.00

CAST IRON AND STEEL PIPE CUTTERS

Model 6 cuts Cast Iron, Duriron, Vitreous Clay Water pipe and Cement Sewer Tile — 2" to 6" pipe $42.50

Model 12 cuts Cast Iron, Duriron, Vitreous Clay Cement Sewer Tile and Steel (with simple changeover to steel wheels) — 4" to 12" cast iron pipe, etc. $84.75

For 4" to 12" for steel pipe only $89.95

Both of these Spring Load Pipe Cutters are heavy duty, precision-built steel-cast cutters designed to exert equal pressure all around the pipe. Cuts are clean and straight, without ears, depressions or splits. Simple and easy to use, the cutters are as practical in the field as in the shop or on the stock pile. Cuts pipe many times faster than ordinary tools and methods.

ASBESTOS-CEMENT PIPE CUTTER — 2" to 8" pipe . . $75.00

You get easy, fast and clean cutting on any asbestos-cement pipe with this on-the-job tool. Practical in the field, at the shop and on the stock pile. Field proven, this tool reduces cutting time 50%. Lightweight—easy to use—no pipe spoilage. Extensions available to increase capacity to 24" pipe.

GRAVITY GRIP VISES

No. V-6 — for 2" to 6" cast iron and steel pipe $24.75

No. V-12 — for 6" to 12" cast iron or steel pipe 44.75

No. V-20 — for 4" to 20" asbestos-cement and clay pipe . . . 44.75

The quickest set-up for holding pipe ever devised. Especially designed for use with Spring Load Cutters and Tenon Tools, the Gravity Grip Vise firmly holds the pipe at a convenient working height and angle.

Send for descriptive literature and price list.
All Spring Load tools are unconditionally guaranteed against faulty workmanship or faulty materials.

SPRING LOAD

MANUFACTURING CORPORATION

3610 First Avenue South Seattle 4, Washington

Recent City Manager Appointments

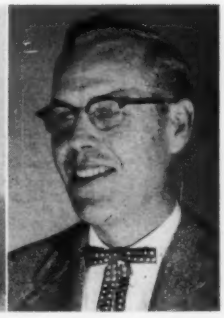
The following portraits are of city managers whose appointments have been announced in preceding issues of *The American City*

Alan Cuthbertson
Canon City, Colo.

Carsten D. Leikvold
Scottsbluff, Nebr.

William J. Pitstick
Arlington, Texas

K. C. Needham
Oakville, Ontario



James O. Tennant
Indio, Calif.

The first manager of Mt. Prospect, Ill., is HAROLD G. APPLEBY, clerk-manager of Zion, Ill.

W. B. AVERY, manager of Manhattan, Kans., was appointed city manager of Springfield, Mo., succeeding Irving G. McNayr.

Succeeding Rodney L. Loomis as city manager of West Hartford, Conn., is DONALD H. BLATT, city manager at Quincy, Mass.

DONALD E. CHICK, city manager of Caribou, Maine, was appointed first manager at Keene, N. H.

J. F. DAVIS, acting manager is succeeding W. O. Jones as manager of Fort Worth, Texas.

Hampton Township, Pa., has appointed JOHN H. EISENMAN, assistant manager, Whitehall Borough, Pa., to succeed W. T. Donaldson.

The first manager of Bethel, Pa., is CHARLES GEISLER, assistant manager, Fox Chapel, Pa.

ERNEST P. KIDD, city manager of Beaufort, S. C., is the first manager of Eustis, Fla.

The first manager of Ann Arbor, Mich., is GUY C. LARCOM, JR., consultant to the State of New Jersey Department of Conservation and Economic Development.

Jesup, Ga., has appointed EDWIN H. MARTIN, assistant manager, Columbia, S. C., as its first manager.

ROBERT R. MITCHELL, administrative assistant, Ferguson, Mo., was appointed city manager of Hollidaysburg, Pa., succeeding William M. Stader.

The manager of Fremont, Mich., EUGENE G. MOODY, will succeed Elmer R. Cross as city manager of Bloomington, Ill.

LEO J. MORENCY, manager of Mexico, Maine, has been appointed to succeed Fred I. Howard as city manager of Rumford, Maine.

Wayzata, Minn., has appointed DONALD E. PIPES, administrative assistant, Park Ridge, Ill., to succeed Earl P. Wagner as city manager.

Sinclair Powell, manager of Oakmont, Pa., has been appointed city manager of Ypsilanti, Mich., succeeding N. G. Damoose.

James O. Tennant, manager of Farmington, Mich., will be succeeded by EARL F. SCHERFFIUS, assistant manager, Port Huron, Mich.

LEON W. SMILEY, highway contractor, was appointed city manager of Jackman, Maine, succeeding Dexter F. Knights.

Scottdale, Pa., has appointed W. H. D. STEELSMITH, of private business, to succeed H. W. Colburn as city manager.

E. A. Ingham (dec.), will be succeeded by A. E. STOCKBURGER, a former manager of Alhambra, Calif., as city manager of Alhambra.

Acting manager, CHARLES W. THOMPSON, has been appointed by Middletown, Ohio, to succeed H. H. Kramer as city manager.

J. MCDONALD WRAY, assistant manager of Charleston County, S. C., succeeded Ernest P. Kidd, as city manager of Beaufort, S. C.

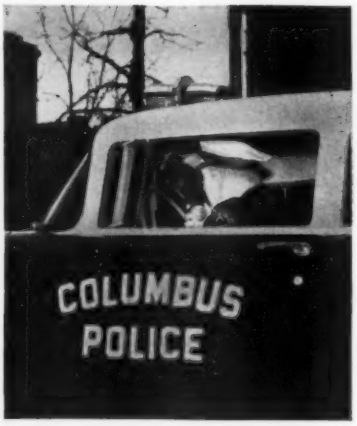
CLARENCE E. RIDLEY
Executive Director
International City Managers' Association

REPRESENTATIVE MUNICIPAL BOND ISSUES

April 1 to April 14, 1956

Date of Issue			*Purpose*		*Average Maturity (Years)*	*Net Interest Cost Per Cent*
4/ 3/56	St. Hyacinthe, Que.	$400,000	Building		10½	3.983
4/ 4/56	Henrietta, N. Y.	250,000	Sanitary Sewer System Const.		13	3.08
4/ 4/56	Martinez, Calif., Parking Dist.	215,000	Off-Street Parking Improvement		17½	4.73
4/ 4/56	Brunswick, Ga.	375,000	Hospital	$250,000	17⅝	2.76%
			Fire Sta. & Eqpt.	50,000	17½	
			Recreation	75,000	17½	
4/ 4/56	Ashland, Ohio	140,000	Building		12¾	2.95
4/ 4/56	Swatara Tp., Pa.	135,000	Improvement		6	3.111
4/ 5/56	Salem, Mass.	125,000	Paving		3	1.87
4/ 9/56	Wickliffe, Ohio	75,900	Water and Sewer Improvement		5½	3.68
4/ 9/56	Oakmont, Pa.	125,000	General Obligation		5½	2.714
4/ 9/56	Coos Co., Ore.	15,000	Building		5½	3.43
4/10/56	Brookhaven, N. Y.	270,000	School Building		14⅓	3.217
4/10/56	Greenburgh, N. Y.	54,000	Improvement		6⅓	3.158
4/10/56	Lapeer Co., Mich.	190,000	General Hospital Addition		5⅓	2.4108
4/10/56	Oyster Bay, N. Y.	1,037,550	Water		14½	3.07
4/11/56	Hartford, Conn.	1,473,000	Public Works	$1,243,000	10⅓	2.263
			and School	230,000	5½	

Compiled from *The Bond Buyer*



New G-E Progress Line Radios Are Now Serving With Ohio's Capital City Force

COLUMBUS, OHIO POLICE SELECT NEW GENERAL ELECTRIC TWO-WAY RADIOS

The Division of Fire and Police Communications, City of Columbus, Ohio, is nerve center of a radio network linking more than three hundred vehicles. A combination of 250-watt and 60-watt base station transmitters, spotted conveniently throughout the city, speed signals to this fleet on a 24-hour basis.

Progress Line Dependability

Progress Line two-way radios are going on duty with cities all over America. General Electric Plug-in-Chassis design means faster servicing, interchangeable chassis permits switching of equipment between vehicles—even between 6 and 12-volt d.c. systems. Simultaneous monitoring of 2 channels from one radio and Tone Signal Calling are other Progress Line advantages.

2-WAY MOBILE RADIO

FREQUENCY STABILITY & SELECTIVITY guaranteed for life!

Investigate The New G-E Progress Line

Your G-E Communications Counselor can show you the advantages you get when you "go G.E." Call him in, or write to: *General Electric Company, Communication Equipment, Section X1056, Electronics Park, Syracuse, N.Y.*

Progress Is Our Most Important Product

GENERAL ELECTRIC

Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

May 6-11—St. Louis, Mo.
AMERICAN WATER WORKS ASSOCIATION. Diamond Jubilee Conference. Sec., Harry E. Jordan, 2 Park Ave., New York, N. Y.

May 7-9—Providence, R. I.
AMERICAN INSTITUTE OF PLANNERS. Annual Meeting (Sheraton-Biltmore). Exec. Dir., Perry L. Norton, 34 Brattle St., Cambridge 38, Mass.

May 7-9—Rochester, N. Y.
EASTERN ASSOCIATION OF FIRE CHIEFS. Annual Meeting (Hotel Sheraton). Sec., Chief Edwin J. Clark, Box 271, Wayne, Pa.

May 8-10—Washington, D. C.
NATIONAL HIGHWAY USERS CONFERENCE. Biennial Highway Transportation Congress (Mayflower Hotel). Dir., Arthur C. Butler, 966 National Press Bldg., Washing 4, D. C.

May 10-11—Yakima, Wash.
ASSOCIATION OF WASHINGTON CITIES. Annual Meeting (Chinook Hotel). Exec. Sec., Chester Biesen, 250 Smith Hall, University of Washington, Seattle 5, Wash.

May 11-12—Washington, D. C.
NATIONAL RIVERS AND HARBORS CONGRESS. Annual Convention (Mayflower Hotel). Exec. Vice-Pres., William H. Webb, NRHC, 1720 M St. NW., Washington 6, D. C.

May 13-15—Gatlinburg, Tenn.
TENNESSEE MUNICIPAL LEAGUE. Annual Convention (Riverside Hotel). Exec. Sec., H. J. Bingham, 228 Capitol Blvd., Nashville, Tenn.

May 15-17—West Lafayette, Ind.
INDUSTRIAL WASTE UTILIZATION CONFERENCE (Purdue Memorial Union). Exec. Sec., Don E. Bloodgood, Professor of Sanitary Engineering, School of Civil Engineering, Purdue University, W. Lafayette, Ind.

May 15-18—Los Angeles, Calif.
AMERICAN INSTITUTE OF ARCHITECTS. Annual Convention (Biltmore Hotel). For further information address Arthur B. Holmes, Director of Convention Activities, 1735 New York Ave., NW, Washington 6, D. C.

May 20-25—St. Louis, Mo.
NATIONAL CONFERENCE OF SOCIAL WORK. Annual Meeting (Hotels Jefferson and Statler). Exec. Sec., Joe R. Hoffer, 22 W. Gay St., Columbus 15, Ohio.

May 21-24—Buffalo, N. Y.
AIR POLLUTION CONTROL ASSOCIATION. Annual Meeting (Statler Hotel). Exec. Sec., H. C. Ballman, 4400 Fifth Ave., Pittsburgh 13, Pa.

May 22-25—New Orleans, La.
NATIONAL INSTITUTE OF MUNICIPAL CLERKS. Annual Meeting (Roosevelt Hotel). Pres., Arthur J. Shinners, Brookline 47, Mass.

May 28-29—Buffalo, N. Y.
NEW YORK SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Spring Meeting (Hotel Statler). Exec. Sec., R. C. Sweeney, State Department of Health, White Plains, N. Y.

June 3-7—Washington, D. C.
MUNICIPAL FINANCE OFFICERS ASSOCIATION OF THE UNITED STATES AND CANADA. Annual Conference (Statler Hotel). Exec. Dir., Joseph F. Clark, 1313 E. 60th St., Chicago 37, Ill.

June 4-8—Boston, Mass.
NATIONAL FIRE PROTECTION ASSOCIATION. Annual Meeting (Hotel Statler). Asst. Gen. Mgr., Charles S. Morgan, 60 Batterymarch St., Boston 10, Mass.

***June 5-8—Boston, Mass.**
ASSOCIATION OF STATE PLANNING AND DEVELOPMENT AGENCIES. Annual Convention (Hotel Statler). Exec. Vice-Pres., L. H. Prince, 1026 17th St. SW., Washington 6, D. C.

June 7—Storrs, Conn.
NEW ENGLAND SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (University of Connecticut). Exec. Sec., Henry F. Munroe, 75 Paine Ave., Cranston 10, R. I.

June 13-15—Cleveland, Ohio
OHIO SEWAGE AND INDUSTRIAL WASTES TREATMENT CONFERENCE. Annual Meeting (Hotel Carter). Sec.-Treas., Ward E. Conrad, 301 Ohio Department Bldg., Columbus 15, Ohio.

June 13-15——Detroit Lakes, Minn.
LEAGUE OF MINNESOTA MUNICIPALITIES. Annual Convention. Exec. Sec., C. C. Ludwig, 15 University Library Bldg., Minneapolis 14, Minn.

June 14-16—McCall, Idaho
IDAHO MUNICIPAL LEAGUE. Annual Convention (Shore Lodge). Exec. Dir., Robertson W. Smith, Center Bldg., Weiser, Idaho.

June 14-16—Pittsburgh, Pa.
PENNSYLVANIA STATE ASSOCIATION OF TOWNSHIP COMMISSIONERS. Annual Convention (William Penn Hotel). Sec.-Treas., Henry C. Lamparski, 1327 Pacific Ave., Breckenridge, Pa.

June 17-22—Atlantic City, N. J.
AMERICAN SOCIETY FOR TESTING MATERIALS. Annual Convention (Chalfonte-Haddon Hall). Exec. Sec., Robert J. Painter, 1916 Race St., Philadelphia, Pa.

June 20-21—Aberdeen, S. D.
LEAGUE OF SOUTH DAKOTA MUNICIPALITIES. Annual Convention (Alonzo Ward Hotel). Exec. Dir., J. G. Barger, P. O. Box 938, Aberdeen, S. D.

June 20-22—Green Bay, Wis.
CENTRAL STATES SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Convention. (Northland Hotel). Sec.-Treas., G. F. Bernauer, 713 Chapman St., Madison, Wis.

June 20-22—Troutdale-in-Pines, Colo.
COLORADO MUNICIPAL LEAGUE. Annual Convention. Exec. Dir., Jay T. Bell, 327 Norlin Library, Boulder, Colo.

June 21-23—Billings, Mont.
MONTANA MUNICIPAL LEAGUE. Annual Convention (Northern Hotel). Exec. Dir., Alfred F. Klinger, Box 546, Shelby, Mont.

***June 27-30—Pittsburgh, Pa.**
PENNSYLVANIA STATE ASSOCIATION OF BOROUGHS. Annual Meeting (William Penn Hotel). Sec., H. F. Alderfer, Room 281, The Capitol, Harrisburg, Pa.

June 28-29—Ocean City, Md.
MARYLAND MUNICIPAL LEAGUE. Annual Convention (The Plimhimmon). Exec. Sec., Edmund C. Mester, Box 276, College Park, Md.

June 28-30—Biloxi, Miss.
MISSISSIPPI MUNICIPAL ASSOCIATION. Annual Convention (Buena Vista Hotel). Mgr., George Lemon Sugg, P. O. Box 531, Jackson, Miss.

July 22-28—Vienna, Austria
INTERNATIONAL FEDERATION FOR HOUSING AND TOWN PLANNING. Annual Convention. For information address Charles Ascher, 838 West End Ave., New York 25, N. Y.

Aug. 14-19—Panama City, Panama
AMERICAN COMMITTEE FOR INTERNATIONAL MUNICIPAL COOPERATION. Sixth Inter-American Congress of Municipalities. For further information address the ACIMC, 1313 East 60th St., Chicago 37, Ill.

Aug. 19-23—Hamilton, Ontario
CANADIAN FEDERATION OF MAYORS AND MUNICIPALITIES. Annual Convention (Royal Connaught Hotel). Exec. Dir., George S. Mooney, Office M-33, Mount Royal Hotel, Montreal, Quebec, Canada.

Aug. 20-24—Toronto, Canada
NATIONAL SHADE TREE CONFERENCE. Annual Convention (Royal York Hotel). Sec.-Treas., L. C. Chadwick, Dept. of Horticulture, The Ohio State University, Columbus, Ohio.

Aug. 29-31—State College, Pa.
PENNSYLVANIA SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Convention (Pennsylvania State University). Exec. Sec., J. R. Harvey, 916 Diamond, Meadville, Pa.

Sept. 6-8—New York, N. Y.
NEW YORK STATE CONFERENCE OF MAYORS. Annual Convention (Hotel Waldorf-Astoria). Exec. Sec., Morgan Strong, 6 Elk St., Albany, N. Y.

***Sept. 6-8—Grand Rapids, Mich.**
MICHIGAN MUNICIPAL LEAGUE. Annual Convention (Pantlind Hotel). Dir., John H. Huss, 205 S. State St., Ann Arbor, Mich.

***Sept. 7-11—Grd. Teton Natl. Pk. Wyo.**
NATIONAL CONFERENCE OF STATE PARKS. Annual Meeting (Jackson Lake Lodge). Exec. Sec., Harlean James, 901 Union Trust Bldg., Washington 5, D. C.

Sept. 9-13—Chicago, Ill.
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE. Annual Conference (Conrad Hilton Hotel). Exec. Sec., Leroy E. Wike, Mills Bldg., Pennsylvania Ave. at 17th St. NW., Washington 6, D. C.

***Sept. 9-14—Seattle, Wash.**
AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Convention (Olympic Hotel). Exec. Sec., Alfred B. LaGasse, 143 S. Lincoln Ave., Aurora, Ill.

***Sept. 12-14—Kalamazoo, Mich.**
AMERICAN WATER WORKS ASSOCIATION—Michigan Section. Annual Meeting (Hotel Burdick). Exec. Sec., T. L. Vander Velde, Chief, Section of Water Supply, Michigan Dept. of Health, Lansing 4, Mich.

***Sept. 16-20—Bretton Woods, N. H.**
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Mt. Washington Hotel). Sec., Joseph C. Knox, 73 Tremont St., Boston, Mass.

***Sept. 17-18—Topeka, Kans.**
LEAGUE OF KANSAS MUNICIPALITIES. Annual Convention. Exec. Dir., Allen E. Pritchard, 512 Capitol Federal Bldg., Topeka, Kans.

Sept. 17-20—Denver, Colo.
INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION. Annual Convention (Cosmopolitan Hotel). Sec., Irvin Shulsinger, 130 W. 42nd St., New York 36, N. Y.

***Sept. 17-20—St. Louis, Mo.**
AMERICAN TRANSIT ASSOCIATION. Annual Convention (Sheraton-Jefferson). Exec. Vice-Pres., G. W. Anderson, 292 Madison Ave., New York 17, N. Y.

***Sept. 17-21—Boston, Mass.**
ILLUMINATING ENGINEERING SOCIETY. National Technical Conference (Hotel Statler). Exec. Sec., A. D. Hinckley, 1860 Broadway, New York 23, N. Y.

(Continued on page 235)

Municipal & Civic Publications

The publications on these pages are available from the addresses indicated in each listing.

Reference Book on States

THE BOOK OF THE STATES, 1956-57—*The Council of State Governments, 1313 East 60th St., Chicago 37, Ill.* 1956. 690 *pp.* $10.

This standard reference work on state governments—their organization, services, finance, and personnel—is now in its 11th edition. Early in 1957 a supplement will be mailed without charge to purchasers of the book, giving the new lists of elective officials and legislators.

The eight main sections of the book are headed: Intergovernmental Relations, Constitutions and Elections, Legislatures and Legislation, Administrative Organization, The Judiciary, Finance, Major State Services, and Directory of the States, Commonwealths and Territories. Much valuable information is contained in the 100-odd, state-by-state tables of basic facts. Emphasis throughout the book is on recent developments.

Cases in Public Administration and Policy Formation

DEFENDING "THE HILL" AGAINST METAL HOUSES—*By William K. Muir, Jr.* 1955. 35 *pp.* 50 *cents* (*Case No.* 26).

THE CLOSING OF NEWARK AIRPORT—*By Paul Tillett and Myron Weiner.* 1955. 52 *pp.* $1 (*Case No.* 27).

Published and distributed for the Inter-University Case Program by the University of Alabama Press, University, Ala.

The first of these two case histories is a fascinating and exceptionally well-told story of a complex but successful struggle by a New Haven, Conn., neighborhood group to prevent the construction of a private low-rent housing development consisting of 65 second-hand prefabricated houses. All of the participants in the social and legal pushing and hauling that ensued are described and their motives analyzed in brilliant style. How New Haven's city government was inevitably drawn into this intensely felt problem and how it dealt with it is excellently described. City administrators, councilmen, and other officials who must deal with complex physical, social, and political problems in their cities and towns will find this case history engrossing and instructive reading.

The Newark Airport case is similarly analyzed and, as the report's introduction states, it offers "the student of administration and government clinical material in *coordination* between operating agencies in the same field; in *public relations* and administration; and in the employment of *political means* to force preoccupied or shortsighted administrators to pay attention to neglected public problems."

Guide for Employees

EMPLOYEE'S HANDBOOK — *Department of Public Property, City Hall, Philadelphia, Pa.* 1956. 20 *pp.*

Here is the latest example of personnel policies and important employee rights and obligations. Written in a personal manner rather than in "officialese," the handbook is illustrated with a series of amusing line drawings. Recommended to officials interested in producing a simple and not-too-expensive employee handbook.

Toward a New View of New Towns

THE BRITISH NEW TOWNS POLICY. *By Lloyd Rodwin. Harvard University Press, Cambridge, Mass.* 1956. 251 *pp.* $7.50.

Lloyd Rodwin has written a brilliant addition to the growing list of "must" reading for all city planners. This new work quickly will take its place beside Clarence Stein's 1951 study, "Toward New Towns For America," as one of the truly significant studies of community and regional growth in recent years.

Professor Rodwin's thinking may surprise many planners who have not followed his most recent writings. For, he tears apart current idealistic thinking about the British new towns policy as a means of reducing heavy metropolitan population concentrations. He challenges some of the underlying economic doctrines upon which the new town's philosophy has been built. And, he traces the deflection of the British thinking about new towns toward a more advantageous policy (in Professor Rodwin's view) of developing existing towns with planned accretions. His theses are excellently documented and easy to follow.

But Professor Rodwin doesn't tear current thinking apart without reason. In a most significant last chapter, he proposes a reconstituted view of the potential values of new towns in a series of passages headed as follows: New Towns and Decentralization; Standards of Living and the Trend Toward Public Entrepreneurship; The Contemporary Preference for Suburban Environment; New Towns and Urban Vulnerability; New Towns and Developing Areas. These last passages pose to planners a host of highly challenging concepts for future urban growth.

Police Work Reported

NINTH ANNUAL PEACE OFFICERS TRAINING SCHOOL—*Governmental Research Center, University of Kansas, Lawrence, Kans. October* 1955. 93 *pp. Free.*

The material in this report of the peace officers training school will be interesting to police personnel whether they attended the sessions of the week-long training school at the University of Kansas or not.

Traffic, fingerprinting and other laboratory aids in criminal investigation, the law of evidence, human relations, firearms, the lie detector, counterfeiting—these are just a few of the many aspects of police work discussed at the school and reported in this booklet.

Downtown Business Centers

COMMERCIAL REAL ESTATE RELATIONSHIPS—*Downtown and Suburban—By Larry Smith, March* 1956 *issue of* Urban Land. *Published by Urban Land Institute, 1737 K St. NW., Washington 6, D. C.* 6 *pp.* $1.

The article by Mr. Smith, and the editorial "Downtown Diagnostics" tell what must be done by downtown property owners and merchants to keep the central business district vigorous and healthy. The article discusses the factors that affect downtown shopping, the basic strength of the central business district, and the reasons for the apathetic approach to making improvements in the downtown district.

Appraisers' Manual

BOECKH'S MANUAL OF APPRAISALS, *Fifth Edition. Published by E. H. Boeckh & Associates, Washington, D. C.* 1956. 840 *pp.* $18.

While past editions of Boeckh's Manual are established as authoritative works, the latest far outstrips previous editions in quantity of data available on the subjects of construction costs and real estate appraisals, readily usable for quick analysis. It has been officially adopted as the basis of tax assessment by the state tax authorities of Wisconsin and New York, plus many cities and counties in the United States and Canada.

Over 300 individual building types are presented, with a photograph and specifications of each, and with several hundred variations of these buildings. The manual is so designed that a person with only slight knowledge of buildings can derive accurate and satisfactory results. In addition to assessors and appraisers, therefore, architects, business and real estate executives will find the manual valuable.

City Attorneys' Salaries Too Low?

CITY ATTORNEYS AND THEIR SALARIES—*By Charles S. Rhyne and Jack M. Merelman. National Institute of Municipal Law Officers, 726 Jackson Place NW., Washington 6, D. C.* 1956. 53 *pp.* $3 (*One free copy to each NIMLO member*).

From their study of the duties and responsibilities of the city attorneys in modern municipalities, the authors conclude that there is a considerable salary discrepancy, and it is their aim to present the salary deficiency in such a way that municipalities will recognize it as a serious handicap and take action on city attorney compensation. An interesting chart at the end of the book gives city attorney salary data by cities, according to population.

Co-operative Housing Quarterly Publication

CO-OP HOUSING—*Cooperative League of the U.S.A., 343 S. Dearborn St., Chicago 4, Ill. A quarterly publication.* $1 *for four issues.* 4 *pp.*

This small publication reports on new approaches to cooperative housing and developments of interest to all persons concerned with better housing.

Municipality Educates Voters

WHY THE 6-YEAR PLAN?—*Planning Department, City of Vancouver, Wash.* 1956. 15 *pp.* 25 *cents.*

In a very concise pamphlet published to instruct the voters on coming bond issues, the City of Vancouver outlines its plans to improve and extend parks, to break traffic bottlenecks, to cut fire losses, and to build a new civic center. In each case, the amount of the needed bond issue is given and how much it would mean per person per day. Also discussed is the need for new sewers—to be financed "pay-as-you-go" by a charge on the water bill.

An Underwood Sundstrand Tax Billing Machine

...speeds tax billing...

and all your other accounting jobs, too!

The Underwood Sundstrand Tax Billing Machine gives you fast, all-around accounting on a single machine. You can switch *in seconds* from speedy, accurate Tax Billing to Collections, Delinquency Notices, Appropriations, Water Billing, Payroll, Accounts Payable—*any accounting job!*

Even untrained personnel develop speed quickly on Underwood Sundstrand's touch-operated 10-Key Keyboard. Fully automatic pointing-off, locked-in multipliers and full cent adjustments mean more accuracy, too!

Let us send you full information on the speedy, versatile Underwood Sundstrand Tax Billing Machine. Mail the coupon today!

UNDERWOOD CORPORATION

One Park Avenue, New York 16, N. Y.

Underwood Corporation
One Park Avenue
New York 16, N. Y.

Gentlemen:

I'm interested in the Underwood Sundstrand Tax Billing Machine. Please send me more information.

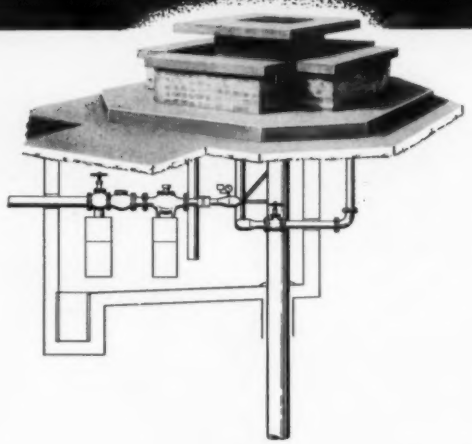
Name.....

Title.....

Office Address.....

City.....Zone.....State.....

OKLAHOMA CITY uses REDA PUMPS to increase its water supply!



Seventeen 75 horsepower REDA *Submergible Electrical* PUMPS can add about 5½ million* gallons of water per day to supplement Oklahoma City's water supply. Capacities of the pumps are from 155 to 320 G.P.M., from 630 to 850 head feet. This application is one of many REDA municipal installations.

Municipalities Choose REDA SUBMERGIBLE PUMPS For

1. **Lower installation cost.**
2. **Lower operating cost.**
3. ***Below-ground* installation - no unsightly surface structures.**

THE BEST PUMP!

THE BEST BUY!

SIGN OF QUALITY

SUBMERGIBLE REDA PUMPS

Address All Inquiries to Reda Pump Co.

Here's why REDA *SUBMERGIBLE ELECTRICAL* PUMPS will protect you from serious water shortage!

- **Economical Operation** — fully automatic, from standard voltages.
- **Large Water Volume** — Capacities from 5 to over 3,000 G.P.M., sizes from ⅓ to 500 H.P. Depths to 5,000 feet or more.
- **Maximum Flexibility** — to meet lowering water tables. Installation is not limited to relatively shallow setting depths of a few hundred feet.
- **Flood-Proof and Freeze-Proof** — Operates in all weather conditions. Controls can be located above flood level and pump can continue to operate during floods.
- **Safe from Vandalism** — Submerged in the well, Reda-Submergible Pumps cannot be damaged by pranks or vandalism.
- **Can be Installed In Crooked Wells** — Operates satisfactorily in crooked or whipstocked wells.
- **Reduced Maintenance** — Factory-sealed lubrication. All working parts are constructed of corrosion resistant materials. Bronze impellers, ni-resist diffusers and monel pump shafts are standard. Other materials are available for special applications.

**Based on 24-hour test pumping rate of 155-320 g.p.m.*

The REDA PUMP COMPANY designs and manufactures its own submergible motors and pumps. They are constructed from the highest quality materials and manufactured in a wide range of capacities and h.p. sizes to give the desired water supply for each particular application. Reda engineers will be glad to work with you on your water engineering problems. Please call or write

REDA PUMP COMPANY

BARTLESVILLE, OKLAHOMA

Manufacturers of Submergible Electrical Motors and Pumps for Over 35 Years

San Francisco Transportation

TRANSPORTATION PROBLEMS IN SAN FRANCISCO—*By Robert S. Nielsen. February 1956 issue of* Urban Land, *published by the Urban Land Institute, 1737 K St. NW., Washington 6, D. C.* 10 *pp.* $1.

The dual problem of central district congestion and transit deterioration faces San Francisco. In this article Robert Nielsen evaluates a current proposal for the solution of the problems, basing hi ideas in part upon his findings in a study made for the Nichols Foundation. The plan under discussion is that developed by the San Francisco Bay Area Rapid Transit Commission.

REGIONAL RAPID TRANSIT, *A Report to the San Francisco Bay Area Rapid Transit Commission. By Parsons, Brinckerhoff, Hall & Macdonald, Engineers. Copies available from the San Francisco Bay Area Rapid Transit Commission,* 1182 *Market Street, San Francisco* 2, *Calif* 106 *pp.* 1956. $15 *plus postage.*

Exhaustive studies made during the past two years to develop a plan of mass transportation for the San Francisco Bay Area are contained in this report. The studies cover such basic factors as population growth, county population projections, economic growth, land development, land use and regional plans, interurban traffic flow, trip origins and destinations, travel related to land occupancy, and projects of future travel.

The report recommends an integrated subway-elevated rapid transit system to serve the Bay Counties. The basic features of the system are a transbay tunnel, subways in downtown San Francisco and Oakland, and 390 miles of total trackage to carry modern high-speed trains.

Urban Renewal in Cleveland

REPORT ON URBAN RENEWAL IN CLEVELAND—*Prepared by The Cleveland Advertising Club for the City of Cleveland and for the Cleveland Development Foundation. September* 1955. 17 *pp.*

The history of the Urban Renewal Program in Cleveland is summarized in this booklet, which reports also on the progress of two major projects and gives reference data for guidance in further study and investigation.

Tenant and Landlord Information

WHAT EVERY LANDLORD AND TENANT SHOULD KNOW—*Citizens' Housing and Planning Council of New York,* 20 *West* 40*th St., New York* 18, *N. Y.* 1956. 16 *pp.*

Here is a good example of the kind of practical service citizens housing organizations can perform. This simply written, indexed pamphlet explains the rights and obligations of landlord, janitor, and tenant for a well-kept apartment building. The booklet covers such things as painting, garbage disposal, cleanliness, heating, plumbing, fire protection, cellar occupancy, overcrowding, and how and where to make a complaint. Agencies in charge of enforcing the law are listed, with addresses and telephone numbers.

While advising the tenant what to do when requirements are not met, the pamphlet also benefits the responsible landlord by pointing out what the tenant must do to help protect the owner's property. The information applies chiefly to tenements and apartment houses in New York City.

GURLEY

INSTRUMENTS FOR POLLUTION CONTROL

Now—Record Wind Velocity in Any of Three Units

The Gurley Universal Anemometer reads wind velocity—important factor in controlling air contamination—in kilometers per hour; miles per hour; or knots. The three units can be used interchangeably. A simple switch over a calibrator changes the instrument's method of recording from one speed unit to another. The indicator pointer instantly adjusts to the correct reading for the unit selected. The Gurley DC Anemometer is wind-powered...requires no outside power to indicate and record velocity. Accurate within 2% at velocities from about 2 to 100 miles per hour, it is frequently used to control other equipment.

Gurley Anemometers are in wide use at municipal and industrial pollution control laboratories, airports, weather stations, oil refineries, in homes and at shore installations. Other Gurley Wind Instruments for pollution control stations include: Wind Direction Instruments, Wind Velocity and Direction Recorders and Pilot Balloon Theodolites. *Write for Bulletin 6000.*

Current Meters, Water Level Recorders Reveal Water Conditions

The study of flow and level of water are two basic steps in controlling pollution of streams and other waters. The basic flow measuring instrument is the Gurley Current Meter, in use in federal, state and municipal bureaus for 70 years. Gurley Current Meters are available in a variety of outfits for use by overhead-cable suspension...wading-rod suspension...exploration and survey parties. Gurley's "Price Pattern" instruments can be supplied in either fresh or salt water models. There is also the "Pygmy" for shallow streams, flumes and canals.

Gurley Water Level Recorders make continuous graphic records for an entire day or week. Float-operated, simple in construction and operation, they are widely used in reservoirs, sewers, sewage disposal and hydro-electric plants, and supplement irrigation and stream gaging measurements. For details on these and many other Gurley Hydraulic Engineering Instruments, write for *Bulletin 700.*

Other Gurley Instruments to aid you in pollution studies include: Densometers for measuring porosity, air-permeability and air resistance of samples; Permeometers for measuring air flow through samples. *Write for further information.*

W. & L. E. GURLEY, 527 Fulton Street, Troy, New York
Instrument Makers Since 1845

Landfill garbage disposal speeded by Tournatractor

Dirt from next disposal trench is dozed over compacted refuse. Tournatractor's blade carries 2½ cu. yds. of material.

Many American cities have solved their refuse disposal problems with sanitary landfill. This system eliminates odors, flies, and rat breeding opportunities and requires less equipment with lower operating costs than other methods of garbage disposal. On a long-term basis, it fills worthless land to convert it into valuable real estate.

On sanitary landfill work, LeTourneau-Westinghouse rubber-tired equipment has a big advantage over other machines.

With Tournatractor, for instance, you can use dozer blade or towed scraper to dig a trench. No shovel or trucks needed. No slow-moving crawlers. One man and one machine can do the complete trenching job.

For covering, Tournatractor also works alone to doze truck-hauled garbage into the trench, and to put on the desired layer of stockpiled dirt. If sufficient cover earth is not available nearby, Tournatractor's 19 mph speeds make practical long-distance dozing or hauling of cover. Because of this speed, job figures show that Tournatractor will do the landfill job 2 to 3 times faster than crawlers of comparable size.

Extra time may be used to handle scattered maintenance-type jobs or to move to another dump. Tournatractor drives anywhere at a moment's notice . . . does not damage concrete or blacktop. With Tournatractor, you drive safely through traffic . . . can get to a job 2 miles away in 5 to 10 minutes.

If you have a garbage disposal problem, ask your local Distributor for all the facts on the landfill method of refuse disposal. He will gladly help you plan a program that will get rid of the unsanitary conditions of an open dump, and, at the same time, give your community improved land which can be used for recreation, or be profitably returned to the tax roll through sale to private owners. Your local banker can probably help you set up a municipal corporation to finance this plan, so that you need not draw on current operating funds.

If you would like to see Tournatractor in action, your LeTourneau-Westinghouse Distributor will also be happy to arrange a demonstration for you.

Tournatractor spreads truck-dumped garbage . . . solidly compacts refuse and cover dirt during normal travel over the trench.

Tournatractor—Trademark Reg. U.S. Pat. Off. T-339-G-22w

LeTourneau-
WESTINGHOUSE
Company
Peoria, Illinois
A Subsidiary of Westinghouse Air Brake Company

Town Reports An Active Year

1955 ANNUAL REPORT—*Town of Wilmington, Mass.* 1956. 113 *pp.*

The most active year in the history of Wilmington's Town Government was 1955, and, consequently, an unusually comprehensive report has been submitted to the citizens. Accomplishments are proudly summarized in early pages of the report and are balanced by a summary of "the job ahead." In later pages each department gives a detailed account of its activities.

Town Manager Joseph F. Courtney in his part of the report tells of the assistance he received in solving long-standing problems through the cooperation of special advisory committees on personnel policies, capital outlay planning, water extension, etc.

Local Recommendation for State Road

RECOMMENDED RELOCATION OF N. J. ROUTE 24—*Morris County Planning Board, Court House, Morristown, N. J. July* 1955. 14 *mimeo. pp. plus* 5 *plates.*

In 1950 the New Jersey State Highway Department proposed a suggested preliminary realignment of Route 24, construction of which has been postponed because of lack of sufficient local acceptance. The Morris County Planning Board, after meetings with other affected municipalities and with the New Jersey State Highway Department, now submits its recommendations for the line of the road.

Combatting Hurricanes

NORTH CAROLINA HURRICANE REHABILITATION PROJECT — *North Carolina Council of Civil Defense, Raleigh, N. C. December* 1955. 64 *pp. plus maps and diagrams.*

This very well presented report is a summary of initial phases of a long-range hurricane rehabilitation project, in which the Council of Civil Defense makes recommendations concerning the proper rebuilding and future development of the coastal area.

Characteristics of hurricanes in that state and damage inflicted in the past are reviewed. The storms are discussed as they affect agriculture, forests, fisheries, beach resorts, towns and cities, and economic progress. The Council believes that an economically sturdy, well-prepared and well-organized community can absorb heavy hurricane losses with no more than a temporary setback to expansion.

Chicago Relocation Study

RELOCATION OF SITE RESIDENTS TO PRIVATE HOUSING. *Limited number of single copies available without charge from Chicago Housing Authority, 608 S. Dearborn St., Chicago 5, Ill. November* 1955. 41 *pp. plus map.*

The extent of housing improvement for site residents relocated to private housing from Chicago Housing Authority clearance areas, between 1952 and 1954, is studied in this survey. Almost all of the families covered were nonwhite.

After relocation, two-thirds of the families lived in standard structures with hot water and central heating. However, evidence of extensive conversions and doubling up continued as in the past, with implications of future deterioration through over-use in the absence of effective neighborhood control.

Cadillac Area Publishes Plan

A PLAN FOR CADILLAC (MICHIGAN) AND ITS METROPOLITAN AREA — *Prepared by the Planning Board and its planning consultant, Scott Bagby, 320 East Fulton St., Grand Rapids, Mich.* 1956. 50 *pp.*

The plan for Cadillac is based on the practical concept that expected population growth be related to the amount of land that will be required for all purposes. Basic steps recommended for early action include a new modern zoning ordinance; urban service areas and subdivision and utility extension regulations; formation of neighborhood councils, and presentation of a community bond issue for improvements. Sound economics are stressed in the plan.

Two ACTION Reports

FINANCING HOME REPAIRS AND IMPROVEMENTS—1956. 13 *pp. Report No.* 13.

AREA IMPROVEMENT SPONSORED BY LARGE INSTITUTIONS: MORNINGSIDE HEIGHTS, NEW YORK CITY—1955. 9 *pp. Report No.* 12.

Published by the American Council To Improve Our Neighborhoods, Inc., Box 462, Radio City Station, New York 20, N. Y.

Report No. 13 advised on types of repairs to be considered, how to estimate the cost, and how to obtain a loan for such repairs and improvements.

Report No. 12 tells the Morningside Heights story—emphasizing the civic participation of institutions and individuals that has made possible the physical and social improvements.

Observations on Architecture and Civic Design

FROM THE GROUND UP—*By Lewis Mumford. A Harvest Book, published by Harcourt, Brace and Company, New York, N. Y.* 243 *pp.* 1956. $1.25.

The essays in this book were published in The Sky Line department of *The New Yorker* between 1947 and 1956. They express Mr. Mumford's thoughts on contemporary building, highway planning, and civic design, and are as often as not sharply critical of the trends being manifested. Although the reviews are confined to New York, the issues, says the author, are universal ones—order or chaos, spaciousness or congestion, esthetic delight or depression. In making his selection of the essays, Lewis Mumford passed over those of purely local interest and those written before 1947. Fresh Meadows, the United Nations Building, Lever House, the Manufacturers Trust Building, and New York City's traffic problems are among the topics discussed.

Summer Activities for Children

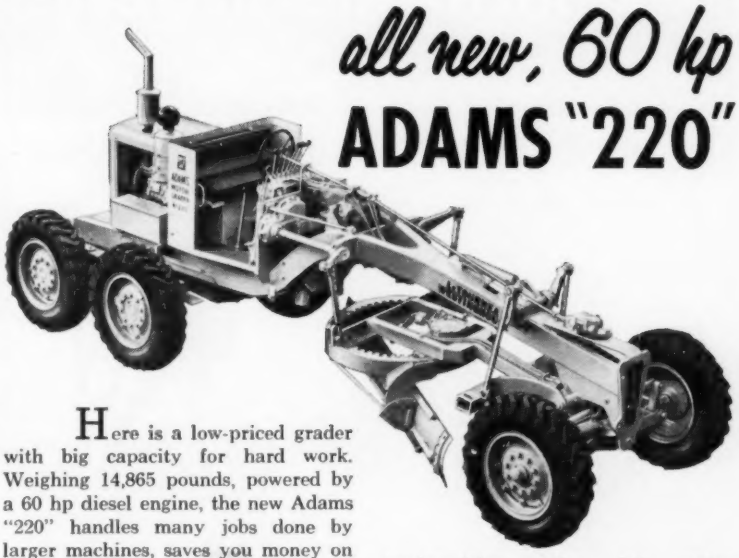
THE PLAYGROUND SUMMER NOTEBOOK—1956 *edition. National Recreation Association, 8 West 8th St., New York 11, N. Y.* $2.50. *(Available after May 15).*

The Notebook published each year has been widely used since 1943 by professional recreation leaders in day camps and city recreation departments. The program suggestions have proved especially helpful. This year's edition will include 11 sections on activities and one on leadership. Typical activities covered are drama, family nights, activities for rainy and hot days, music and dancing, nature, arts and crafts, and special events.

Today's big news in graders...

all new, 60 hp

ADAMS "220"



Here is a low-priced grader with big capacity for hard work. Weighing 14,865 pounds, powered by a 60 hp diesel engine, the new Adams "220" handles many jobs done by larger machines, saves you money on general grading and road maintenance. Big in value, the Adams "220" out-works, out-maneuvers any grader in its size and price class.

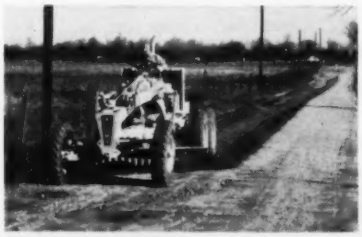
Works like a big machine

Like the larger Adams machines, the "220" has 4 working speeds under 6.5 mph, and 4 optional "creeper" speeds for full use of engine power in slow, rugged, or precise work. Travels job-to-job up to 18.3 mph.

Blade controls are straight-line-thrust hydraulic. Moldboard swings from ditch-cut to 90° high bank cut on either side of grader, in less than a minute, without operator leaving cab. 10-ft. slide-shift moldboard has 6 pitch positions, and reaches 54½" outside wheels. Leaning front wheels, hydraulically operated, offset side thrust, make short turns possible. Wide tread (76" front, 77" rear) gives stability, safety, and easy handling on slopes.

Built like a big machine

"220's" big 10:00 x 24 tires on all six wheels give firm footing and minimum rolling resistance. Sturdy 4-wheel tandem-drive utilizes full engine power, provides push-power and traction for doing many of the heavier jobs. Rugged diesel engine is cranked electrically, starts quickly in all seasons. Optional cab has 6'4" inside height, floor to ceiling, without use of "foot wells".



Four work speeds, 1.8 to 6.4 mph, provide best combination of power and speed for every grading assignment.

Sturdy one-piece, rectangular-welded-section frame, and strong Y-shape drawbar, withstand punishing shocks and stresses. Arched frame provides 17" blade clearance to clear shoulders when climbing out of ditch.

Anti-friction steering, and smooth, fast-acting hydraulic brakes give operator confidence to work or travel at highest practical speed.

Scarifier, power-shift moldboard, 12' blades, cab are optional.

See Adams in action

We will be glad to prove to you that "220" as well as larger Adams graders work harder, faster, and at lower cost than other graders of similar size and power. Why not call or write and ask for a competitive demonstration?

Model 220.... 60 hp....14,865 lbs.
Model 330.... 80 hp....20,500 lbs.
Model 440....104 hp....21,500 lbs.
Model 550....123 hp....23,500 lbs.
Model 660....150 hp....27,730 lbs.

AG-44-G-z

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

Meet AWWA Specifications* for Tight Closure

at Maximum Shut-off Pressures of 25, 50 and 125 psi

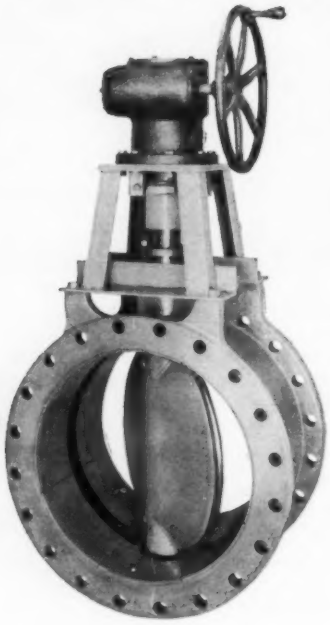
with your choice of

W. S. ROCKWELL

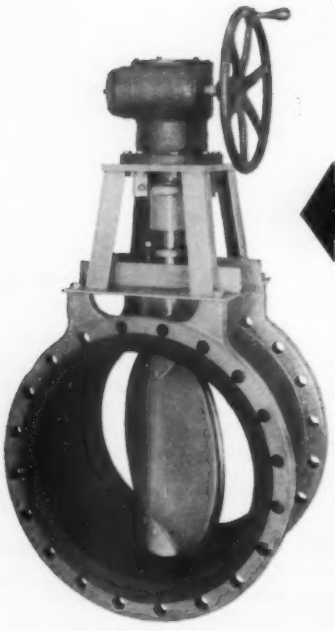
Flanged-End

BUTTERFLY VALVES

Rubber-Seated



Rubber-Lined



Both types in all sizes to 72". Manual operators – gear reducer with hand wheel or chain wheel; automatic operators–electric, hydraulic or pneumatic; for safe seating and unseating of valve disc at water velocity of 8 and 16 f.p.s.

A standard line of valves in sizes to 144" is available for other industrial, municipal and utilities requirements for tight shut-off or regulation of fluid flow. Write for Catalog.

*AWWA C-504-55T

W. S. ROCKWELL COMPANY

ROCKWELL SINCE 1888 BUILT

BUTTERFLY VALVES • SLIDE VALVES • AUTOMATIC VALVES

2726 ELIOT STREET • FAIRFIELD, CONN.

Sales Representatives in Principal Cities

Morris County Parks

A PRELIMINARY REPORT ON COUNTY PARKS—*Morris County Planning Board, Court House, Morristown, N. J. June* 1955. 25 *pp. plus plates.*

Feeling that the time has passed for half-way measures for park development, in view of the recent rapid growth of Morris County, the Planning Board recommends immediate action on reserving land for future parks, and urges the voters to establish a county park commission to administer the park system. The Planning Board also outlines preliminary recommendations to meet the actual park needs.

Community Organization

COMMUNITY ORGANIZATION: THEORY AND PRINCIPLES—*By Murray G. Ross. Harper & Brothers, New York.* 1955. 254 *pp.* $3.

This scholarly treatise, by the Associate Professor of Social Work at the University of Toronto, will be welcomed by social scientists in general and by teachers of community courses in particular. The book does not pretend to be a popular handbook for the layman. Rather, to quote from the publisher's statement:

"This is a major contribution in an important field—a penetrating, mature, and provocative volume. Moreover, it is the first one to discuss systematically the theory underlying community planning services for human welfare and the principles involved in the understanding and use of the community organization process.

"*Community Organization* also analyzes practical applications of this theory, using cases drawn from both American and international sources to illustrate and develop important points."

Urban Renewal Very Dependent on Public Relations

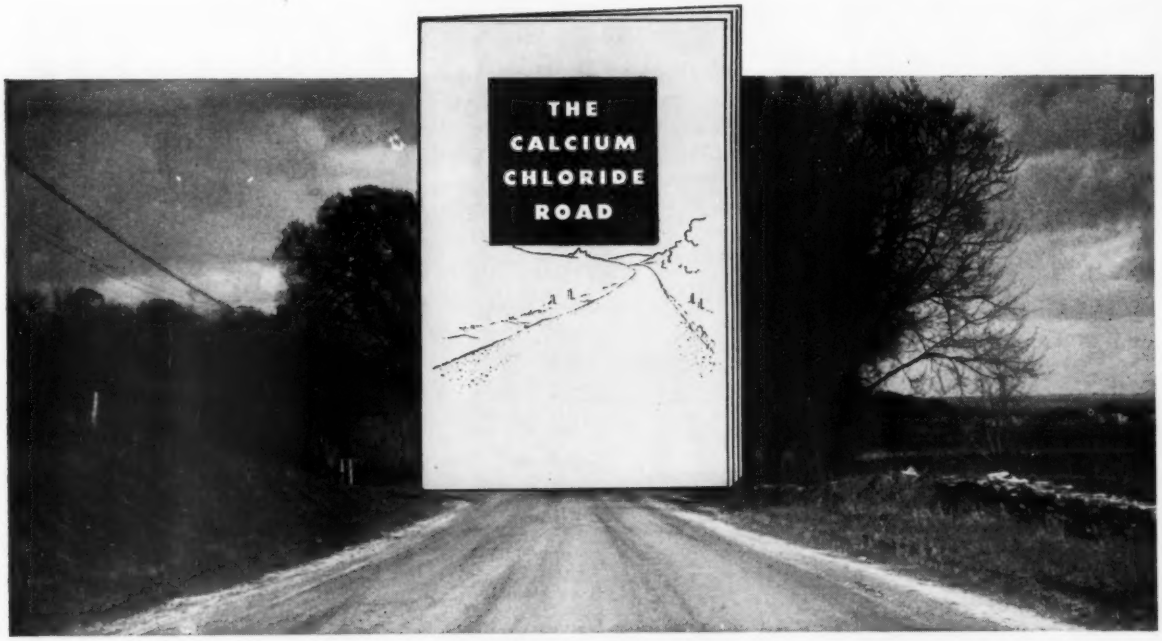
PUBLIC RELATIONS AND URBAN RENEWAL—*By Alice Gorman. National Association of Housing and Redevelopment Officials,* 1313 *E. 60th St., Chicago* 37, *Ill. January* 1956. 14 *pp.* $1.

One chapter of a forthcoming manual on public relations, due to be published by the Government Public Relations Association, is here preprinted in pamphlet form. It describes the role of public relations in the field of housing, slum clearance, redevelopment, and neighborhood conservation, where the need for intelligent guidance of public opinion is crucial. As the author puts it, "The only valid gauge of the efficacy of the public relations operation is how well it succeeds in creating the kind of favorable climate necessary to achieve the renewal goals desired by a city."

California Planning Bibliography

LOCAL PLANNING RESEARCH — *Bureau of Governmental Research, University of California, Los Angeles* 24, *Calif.* 1956. 95 *pp* $1.50.

This bibliography will prove useful as a handy reference to the research materials needed by California local planning agencies in their regular activities. Publications are listed under such headings as planning administration, building location and site selection, the master plan, economics, industrial and commercial planning, land use, population, recreation, streets and highways, subdivision, urban renewal, and zoning.



THIS BOOK SHOWS YOU HOW WITH A LIMITED BUDGET YOU CAN

★ **End dust complaints!**
★ **Cut replacement costs!**
★ **Reduce blading expense!**
★ **Provide smoother surfaces!**

with the SOLVAY Calcium Chloride Road

The SOLVAY Calcium Chloride road is the easy and *economical* way to convert unpaved, secondary roads into smooth, dust-free consolidated surfaces.

Get all the facts . . . send for your copy of "The Calcium Chloride Road". It contains important chapters on: What is the Calcium Chloride Road?—Why the Calcium Chloride Road Has a Low Maintenance Cost—Why a Calcium Chloride Road Has a High Salvage Value—How to Plan a Calcium Chloride Road—The Composition of a Calcium Chloride Road—How to Convert a Road Lacking Sufficient Aggregate or Binder Soil—Proper Drainage, Shaping and Blading—Application of Calcium Chloride—Summer and Fall Maintenance of Calcium Chloride Roads, etc.

WITHOUT COST OR OBLIGATION—
send for your book—NOW!

SOLVAY

SOLVAY PROCESS DIVISION

Allied Chemical

Allied Chemical & Dye Corporation
61 Broadway, New York 6, N. Y.

Please send me your FREE BOOK, "THE CALCIUM CHLORIDE ROAD."

Name .....

County or Township (or company) .....

Address .....

City ..... Zone..... State..... 61-5

Here's Proof of MB Packer Superiority

one haul does it all!

Look at the load in this M-B Packer Body! Springy evergreen branches, cardboard boxes, jumbo tin cans, wet garbage, gritty ashes, unwieldy branches — as tough an assortment of refuse you'll find anywhere! Only the M-B Packer Body with exclusive *progressive compaction* can load hard-to-pack material like this without pre-selection, double handling and call-backs.

Convenient side loading doors on both sides of the body are big enough for two collectors to work side-by-side. In alleys and other off-street locations four men can load at once. A powerful, roof-to-floor packing plate makes it easy to pack dozens of items that ordinary units can't touch. There's no need to baby your M-B Packer . . . it's engineered for long-life and rugged service with more blocks of collection from each route.

And you get added utility with the M-B Packer Body. Many cities and towns have found that the van-type design and flat, reinforced roof of the body make it the ideal unit for hauling park equipment, traffic markers, sand, snow, nursery stock, etc. Only with the M-B do you get this extra *bonus* feature!

NO ITEM TOO BULKY! City of Clay Center, Kansas finds the M-B Packer Body ideal for both commercial and residential pick up. This unit makes approximately 500 residential stops for refuse and garbage in a six hour period.

DUMPS FASTER! Smooth walls, floor and ceiling of the body make load ejection fast and easy. There's no need for expensive hydraulic dumping mechanisms—no "upending" of truck when dumping. And you get the added economy of a smaller truck chassis.

PACKER BODIES • LINE MARKERS • SWEEPERS • PAINTS AND BEADS

M-B CORPORATION

NEW HOLSTEIN, WIS.

MANUFACTURERS OF QUALITY MUNICIPAL AND CONSTRUCTION EQUIPMENT SINCE 1907

City Planning in New York City

NEWSLETTER. *City of New York, Department of City Planning, 27th Floor, Municipal Building, New York City, N. Y. April* 1956. 4 *pp. Free.*

This is the first issue of a newsletter to be published from time to time by the New York City Department of City Planning. As announced by New York's new Planning Commission Chairman, James Felt, the purpose of the newsletter is to present current information concerning the planning, growth, and development of New York City.

The first issue presents a discussion of the city's school building program, an improvement of the downtown Manhattan street pattern, and the zoning of Staten Island. It also lists the 1956 planning goals of the city. Economic and other data are included, and in cooperation with the Department of Buildings, future issues will contain a tabulation of building starts within the city.

How Much Will New Growth Cost the City?

THE COST OF MUNICIPAL SERVICES IN RESIDENIAL AREAS—*By William L. C. Wheaton and Morton J. Schussheim. Prepared for Housing and Home Finance Agency. For sale by Office of Technical Services, U. S. Department of Commerce, Washington* 25, *D. C.* 1955. 105 *pp.* $2.

The research and studies forming the basis of this report were conducted by the Department of Regional Planning of Harvard University, under the supervision of Dr. Wheaton. The study undertook the development of a technique that would be useful in measuring the long-term costs of municipal services in different types of areas. Three representative suburban communities were analyzed in detail to ascertain the costs of additional residential growth of 500 or 1,000 houses in two or more locations and at several densities.

The analytical techniques developed, although needing further refinement, will aid communities in making decisions relative to new growth.

Concrete Reference Material for Engineers

SIGNIFICANCE OF TESTS AND PROPERTIES OF CONCRETE AND CONCRETE AGGREGATES. *ASTM Special Technical Publication No. 169, published by the American Society for Testing Materials,* 1916 *Race St., Philadelphia* 3, *Pa.* 393 *pp. Cloth cover* $6.00; *heavy paper cover,* $5.25.

A series of papers by leading authorities on the subject of concrete. The book is divided into four principal groups. Part I includes four papers on sampling, statistical considerations, evaluation, and needed research. Part II contains 22 papers on tests and properties of freshly-mixed concrete, hardened concrete, and special categories, including ready-mixed and light-weight concrete and aggregates. Part III includes 9 papers on tests and properties of concrete aggregates. Part IV contains four papers on tests and properties of other materials such as water, curing materials, air entraining admixtures and mineral admixtures.

A useful book for engineers and executives not expert in research and testing but who are responsible for concrete construction and who must know what tests are required and significant for adequate job control and results—an important reference for testing engineers and laboratory technicians.

ANNOUNCING THE NEW...
No-Joint Concrete Pipe Machine

NEW LABOR-SAVING METHOD OF CAST-IN-PLACE NO-JOINT CONCRETE PIPE

Here are 17 reasons Why No-Joint Concrete Pipe Machine Will Save You Time and Money

MACHINE CONSTRUCTING 48" STORM DRAIN

1. No need for fixed plant locations. Kange of operation is unlimited.

2. Small jobs of one or two day's duration are possible, the limitation being the cost of moving the simple portable equipment to and from the job site.

3. On-site construction eliminates the problem of transporting prefabricated pipe.

4. The entire operation is extremely simple. Only low-cost light portable equipment is utilized.

5. Capital outlay is much smaller than that required for manufacturing, transporting and installing other types of pipe.

6. Depreciation and maintenance of equipment is reduced to minimum.

7. There are no capital investment inventories to tax.

8. Storage of equipment requires only a small area.

9. Trench excavation is reduced to minimum. The trench has the same outside dimension as the pipe.

10. Because of the unusual favorable bedding or foundation, No-Joint pipe has satisfied load conditions usually met with reinforced concrete culvert pipe.

11. Connections and curves are simply made with little added labor cost.

12. Simplicity of manhole and catchbasin construction keeps this cost to a minimum.

13. Expansion and contraction troubles are minimized by restraint of movement provided by the bond between the pipe and trench.

14. Requirements of concrete mix design are relatively simple.

15. The time required to train an efficient construction crew is short.

16. Labor cost is about one-fourth that required for manufacturing and laying precast pipe.

17. The hazard created by distribution of pipe "trench side" is avoided.

WRITE TODAY *for full details to*

NO-JOINT
CONCRETE PIPE CO.
P. O. BOX 512
YUBA CITY, CALIFORNIA

All-round Dirt-Moving Team

for low-cost operation

LARGE ENOUGH to get jobs done fast—
SMALL ENOUGH for profitable use on low-yardage jobs

HD-11 crawler—75 drawbar hp. Gets more work done faster and at lower cost with these on-the-job advantages: shock-absorbing, all-steel, box-A main frame; rugged final drives that ride on straddle-mounted roller bearings; 1,000-hour lubrication intervals for truck wheels, idlers and support rollers; ceramic-lined master clutch that requires fewer adjustments, provides extra long life; plus new operator convenience that includes a big foam rubber seat and 24-volt direct electric starting.

AC-106 scraper—6.1 yd struck, 7.5 yd heaped. Plenty of features for fast, low-cost dirt moving: curved, offset cutting edge and "center-boiling" loading action; wide, low bowl to keep center of gravity low; high-flotation tires and ample ground clearance; maximum stability for working on slopes or rough terrain; 81-in. apron opening and forward-forced ejection for quick, clean dumping; easy adjustments; simple sheave system.

• • •

See these and other important earth-moving advantages of Allis-Chalmers crawler tractor and scraper combinations at your Allis-Chalmers construction machinery dealer. He has complete facilities to serve you—factory-trained servicemen, factory-approved methods and complete stocks of True Original Parts.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

Ridding New York of Its Slums

SLUM CLEARANCE AND URBAN REDEVELOPMENT IN THE CITY OF NEW YORK—*The Bowery Savings Bank, 110 E. 42 St., New York, N. Y. February* 1956. 29 *pp. Free.*

Because The Bowery Savings Bank believes in making money available to private enterprise for replacement of slums by well-planned residential neighborhoods, it has issued this booklet calling the attention of those officials concerned with housing to past accomplishments and present plans and potentialities of New York City's urban redevelopment program. The brief is based on a report prepared by Frederick H. Allen and supplemented by B. T. Fitzpatrick.

Golf Clubhouse Design

PLANNING THE GOLF CLUBHOUSE—*By Harold J. Cliffer. National Golf Foundation, 407 S. Dearborn St., Chicago* 5, *Ill.* 1956. 96 *pp.* $9.

Specific facts on types and sizes of facilities needed, space required, and efficient functional arrangement of facilities make this book valuable to architects, building committees, and municipal planning bodies.

Officials of numerous private, municipal, and semiprivate courses were interviewed on their experience with the design, operation, and maintenance of their clubhouses, and the good and bad features were thoroughly discussed. From these studies were determined the minimum and maximum requirements for any size clubhouse. This guide in setting up the basic functional structure is not intended as a book of ready-made plans, although many clubhouse plans are illustrated.

Other Reports Received

Administration and Government

RUSSELL SPRINGS, KY.—Industrial Resources. Prepared by Lions Club of Russell Springs and The Agricultural and Industrial Development Board of Kentucky, Frankfort, Ky. November 1955. Map. 15 pp. plus Appendices. $2.

Annual Report

BROOKLINE, MASS.—1955 Annual Report of the Town Officers and the Town Records. Prepared by the Clerk's Department. Charts. 300 pp.

CINCINNATI, OHIO—1955 Annual Report of Cincinnati Progress. Distributed by the Cincinnati *Times-Star*. Newspaper form. Illus. Map. 16 pp.

EASTON, PA.—Sixty-Eighth Annual Report 1954. Compiled by C. E. Rogers, City Clerk. Tables. 110 pp.

JAMESTOWN, N. Y.—1955 Annual Report of the Board of Public Utilities. Tables. 32 pp.

LAKE MILLS, WIS.—Your City's Progress. 1955. Prepared by City Manager James R. Schubert. Illus. 12 pp.

LOS ANGELES, CALIF.—Annual Report of the City Engineer, 1954-1955. Prepared by the Bureau of Engineering, Department of Public Works. Illus. Maps. Tables. 79 pp.

Fordin' Along...

According to the American Society of Civil Engineers the seven wonders of the modern American engineering world include (1) Grand Coulee Dam (2) San Francisco-Oakland Bridge (3) The Chicago Sewage Disposal System (4) The Colorado River Aqueduct (5) Panama Canal (6) Hoover Dam, and (7) Empire State Building. Six of the seven have to do with water, and four with its storage, distribution or disposal.

Why **BREAK YOUR BACK?**

When the Ford Lifter Worm Lock is so easy to use

Snow, ice and dirt tending to hold down meter box lids are easily conquered with the Ford Lifter Worm Lock.

This simple mechanism, operating like an auto-jack, has a tremendous lifting force that breaks any seal around the edges of your covers.

It's handy, too, because it locks and unlocks your lid to prevent tampering. It offers extra safety because an unlocked lid is detected at a glance.

The key which operates the Lifter Worm Lock serves as a handle to lift the lid, saving time and keeping hands clean.

Send for complete data and Free Catalog.

THE FORD METER BOX COMPANY, INC.
WABASH, INDIANA

FOR BETTER WATER SERVICES — FORD

MASSAPEQUA PARK, N. Y.—Report of the City. 1955. Submitted by Samuel M. Barnhart, Mayor. Illus. Maps. 25 pp.

MILTON, MASS.—Report of the City. 1955. Tables. 440 pp.

NEW YORK, N. Y.—Prepared by the Department of Public Works. 1955. Illus. Maps. 127 pp.

——1955 Annual Report of the Port of New York Authority. Illus. Charts. Maps. 76 pp.

PORTLAND, MAINE—1955 Annual Report of the Department of Public Works. Tables. Unpaged.

SUFFOLK COUNTY, N. Y.—Progress Report. Prepared by the Suffolk County Planning Board. 1955. Charts. 12 pp.

UNIVERSITY CITY, Mo.—Fifty Years of Progress, 1906-1956. Prepared by the City Manager, Elder Gunter. 48 pp.

YOUNGSTOWN, OHIO—Annual Report. Prepared by the Board of Sinking Fund Trustees. 1956. Tables. 17 pp.

Education

CONNECTICUT—Higher Education In Connecticut . . . Whose Responsibility? Prepared by Connecticut Public Expenditure Council, 21 Lewis St., Hartford, Conn. 1956. Tables. 23 pp.

Finance and Taxation

DALLAS, TEXAS—Annual Financial Statement. Oct. 1, 1954-Sept. 30, 1955. Prepared by E. Lynn Crossley, City Auditor. Tables. 107 pp.

EAU CLAIRE, WIS.—Financial Report. Prepared by David D. Rowlands, City Manager. 1955. Tables. 56 pp.

GENERAL—FHA Financial Statement. 1955. Prepared by the Federal Housing Administration, Norman P. Mason, Commissioner, Washington 25, D. C. Pamphlet.

IRONDALE, ALA.—Annual Financial Report. 1955. Submitted by Hubert Kilgore, Mayor. 4 pp.

MANHATTAN, KANS.—1955 Annual Financial Report. Prepared by Robert J. Albertson, Administrative Assistant. Tables. 65 pp.

MIAMI, FLA.—Miami Economic Report. 1955 Edition. Published by Industrial Development and Research Division, P. O. Box 708, Coconut Grove, Miami, Fla. 20 pp.

MINNEAPOLIS, MINN.—Final Budget Estimate for 1956. Prepared by the Board of Estimate and Taxation. Tables. 76 pp.

NEW YORK—Preliminary Report of the Trustee in the Matter of Hudson & Manhattan Railroad Company, debtor. Herman T. Stichman, Trustee of the Debtor, 30 Church St., New York 7, N. Y. 35 pp. Appendices.

NORTH CHICAGO, ILL.—Know Your Tax Dollar? Office of the Mayor, Anton Macrowski, Jr., North Chicago, Ill. Unpaged.

OREGON—First Biennial Report of the Oregon Development Commission. January 1955. Oregon Development Commission, 741 State Office Bldg., Portland 1, Ore. 14 pp.

——Occupation, Business and Amusement License Fees and Taxes in Oregon Cities, 1954-1955. Prepared by the Bureau of Municipal Research and Service, University of Oregon, Salem, Ore., in cooperation with the League of Oregon Cities. Tables. 75 pp.

SAN DIEGO, CALIF.—Annual Financial Report of the Water Department, for the fiscal year ended June 30, 1955. Prepared by the Department of Finance. Tables. 16 pp.

UNIVERSITY CITY, Mo.—50 Years of Progress. 1906-1956. Annual Financial Statement. Presented by City Council, 6801 Delmar Blvd., University 5, Mo. Brochure.

VIRGINIA—Gas Rates In Virginia Municipalities. Prepared by the League of Virginia Municipalities, 905 Travelers Bldg., Richmond 19, Va. 1955. Tables. 28 pp. $1.

WASHINGTON—Financial Transactions of Counties and Taxing Districts. 1954. Prepared by Office of State Auditor, Division of Municipal Corporations, Cliff Yelle, State Auditor. Tables. 18 pp.

——Report on the Financial Transactions of School Districts, Year Ended June 30, 1955. Prepared by Office of State

Don't throw away those revenue dollars

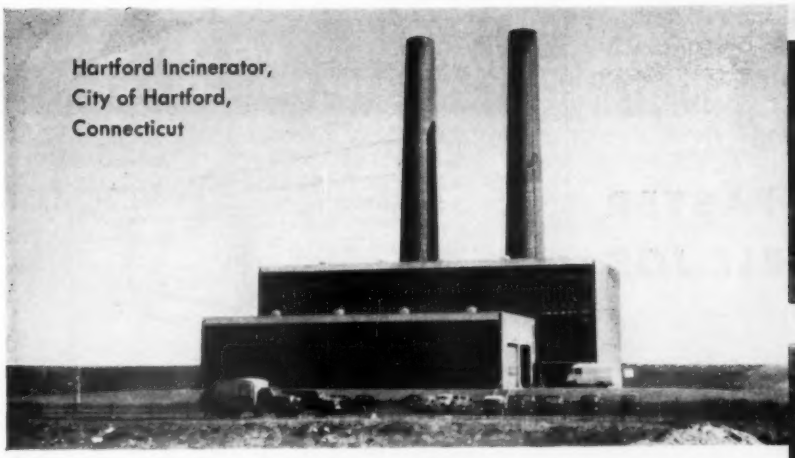
SAVE THEM WITH PRECISION RECORDING BY

CALMET

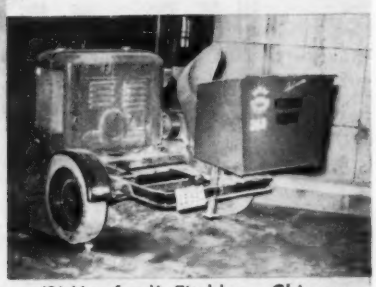
"THE METER YOU CAN COUNT ON"

CALMET WATER METER

MANUFACTURED BY
WELL MACHINERY & SUPPLY CO., INC.
FORT WORTH, TEXAS



Hartford Incinerator,
City of Hartford,
Connecticut



(1) Hartford's Fitchburg Chipper

(2) Fitchburg Chipper in action

Modern Hartford disposal plant uses FITCHBURG CHIPPER

Hartford's new municipal incinerator is used to dispose of more than 400,000 pounds of waste every day. The large picture above shows this efficient, attractive plant—one of the most modern in the nation.

An important part of Hartford's up-to-date disposal program is their portable Fitchburg Chipper, which cleans up disposal jobs the incinerator cannot handle, and goes out on location for road use.

Hartford had these problems:

• *Banana Stalk Disposal* • *Brush Disposal on New Roads*
• *Christmas Tree Disposal* • *Road Clearance from Storm Damage*

How a Fitchburg Chipper solves these problems:

Joseph J. Coffey, Superintendent of the Hartford Incinerator, tells you in his own words how Hartford solves these problems: BANANA STALKS: "We chip 2 to 4 tons of banana stalks each week. These stalks will not burn regardless of heat in the furnaces, and we had to dump them until the Fitchburg Chipper went on duty." CHRISTMAS TREES: "During the post-Christmas season we receive many Christmas trees which we can now get rid of without the trouble of watching for burnt-down spike-like stubs which cause much trouble with the incinerator equipment."

BRUSH DISPOSAL: "Our Highway Division has used our Fitchburg Chipper to clean up the brush and branches along newly developed road areas. By chipping brush, the city saves in use of both manpower and trucking costs." ROAD CLEARANCE: "If we get hit again by hurricanes or bad wind storms, we now have an excellent piece of equipment that will enable us to readily open up the streets for emergency traffic by reducing the fallen branches to chips."

As to maintenance, Mr. Coffey says: "Our Fitchburg Chipper will pay for itself in a very short time. Maintenance, so far, is just keeping it supplied with gasoline and fully lubricated. It is easy to handle, easy to store, and very easy to use."

Get the facts!

Mail coupon for big, FREE, colorful booklet. Specifications, operating data, explanation of exclusive Fitchburg Safety Spring, actual letters from users.

FITCHBURG ENGINEERING CORPORATION

Read what leading Fitchburg users say

LINE CLEARANCE

The Shade Tree Service Company, Webster Groves, Mo.: "Our figures show that production has been increased by a good 25% with the use of the Fitchburg Chipper. One man can operate the chipper with ease. He alone can handle as much, and more, brush in the same length of time as could two men loading brush on a platform body."

POWER COMPANY

Rockland Light and Power Company, Nyack, N. Y.: "Our men have been particularly pleased with their Fitchburg Chippers. They are rugged and reliable and the convenience of flexible, yet instant brush disposal has the advantage of promoting good public relations and still gives us efficiency."

Send for FREE BOOKLET

Fitchburg Engineering Corporation
Fitchburg, Mass., Dept. AC-56

Send my Free Chipper Booklet.

Name_____

_____
(Position or Company)

Address_____

City_____ State_____

USE KA-MO DRILLS

FOR A BETTER–FASTER MORE PROFITABLE JOB

8" KA-MO boring bit was equipped with wing cutters to produce a 9" bore to accommodate 8" casing.

These photos were taken at a job where it was necessary to drill under a highway to supply gas to a nearby town. A KA-MO drill gobbled up a core of dirt 9" in diameter and 112' long. Moving at a rate of 8" to 12" per minute, the KA-MO Auger completed the bore within a matter of hours without interruption of traffic.

HORIZONTAL BORING

FOR — water, sewer, oil and gas pipe lines — gas and electric services.
UNDER — highways — railroad beds — streets — alleys — lawns. With or without casing. With no interruption of traffic.

VERTICAL BORING

FOR — locating gas leaks — telephone, telegraph and power poles — elevator shafts — pre-bore for piling — drainage installations — foundations — soil testing.

ANGULAR BORING

FOR — anchor holes — batter piling, etc.
DRILLS THRU — hardpan, clay, shale, other mineral formations and frost.

EASY TO SET UP • PORTABLE • EASY TO OPERATE

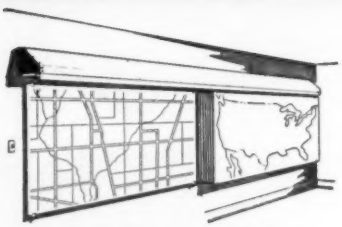
POWERED BY			
AIR	**HYDRAULIC**	**ELECTRIC**	**GASOLINE**
4 H.P. to 18 H.P. or in dual or triple drives to 45 H.P.	11.6 to 50 H.P.	1.9 H.P. to 100 H.P.	Engine Drive

DRILL SIZES—2½" to 48" diameter and lengths to meet your needs.

WRITE TODAY — LET US TELL YOU HOW WE CAN REDUCE YOUR DRILLING COSTS

KA-MO TOOLS, INC.
EARTH BORING EQUIPMENT
1845 SOUTH 55th AVE. • CICERO 50, ILL.

New! **SIMPLE AND EASY METHOD OF FILING CITY MAPS**



ROLL-A-WAY FILING SYSTEM

A simple, practical and inexpensive method of filing large drawings, such as maps of city plats and sewage and water systems, so as to make them readily accessible. Consists of a rack with parallel tracks from which the maps are suspended by means of roll hangers. Any desired map can be quickly rolled from its filing place out into full view.

Standard racks come in various sizes and have 8 tracks. Can be built to accommodate any specified number of tracks. Designed to meet your individual requirements.

Write for Literature

ROLL-A-WAY FILING SYSTEMS CO.
4845 Bellevue **Detroit 7, Mich.**

GEOPHONE locates leaks without digging

**Trademark Reg. U. S. Pat. Off.*

When the discs are placed on the ground (as pictured) the Globe Geophone detects by sound the exact location of leaks in water or steam pipes. Acclaimed for its accuracy, the Globe Geophone has become indispensable in Public Works Departments and Industrial Plants throughout the United States.

• MONEY-SAVING

You save the costly expense of extensive surveys, excavating and replacing. The inexpensive Globe Geophone pays for itself many times over in money saved.

• ACCURATE

Operating on the principle of the seismograph, the Globe Geophone is without question the most sensitive and reliable instrument for detecting underground leaks.

Complete Geophone outfit consists of connecting tubes, two Geophone discs, headpiece, and heavy leather-covered carrying case with shoulder strap **$95**

Pipe Phone $4.70
(Aquaphone)

Globe Phone Mfg. Corp. **Reading, Mass., U. S. A., Dept. Y**
Manufacturers of Geophone Since 1918

Laws and Local Decisions

NEW JERSEY—1955 Laws of Interest to New Jersey Municipalities. Prepared by New Jersey State League of Municipalities, 603 Trenton Trust Bldg., Trenton 8, N. J. 55 pp. $1.

Miscellaneous

FLORIDA—Florida Voters Guide. Prepared by Public Administration Clearing Service of the University of Florida, Gainesville, Fla. 1955. 24 pp.

NOVA SCOTIA—Proceedings of the Golden Anniversary Convention of the Union of Nova Scotia Municipalities, August 30-31, September 1-2, 1955. Illus. 127 pp.

Personnel

GENERAL—State Distribution of Public Employment in 1955. Prepared by the Department of Commerce, Sinclair Weeks, Secretary. Charts. Tables. 26 pp.

——Suggested Draft For Employees' Handbook Adaptable to Any Size Authority. 1955. Prepared by Personnel & Training Committee, National Association of Housing and Redevelopment Officials, 1313 East 60th St., Chicago 37, Ill. Unpaged. 50 cents.

READING, PA.—The Berks Booster. Prepared by the Chamber of Commerce of Reading and Berks County. 1955. 8 pp.

Planning, Housing and Zoning

BOSTON, MASS.—Capital Improvement Program, 1957-1961. Prepared by the Boston City Planning Board, Thomas F. McDonough, Chairman. Tables. Maps. 83 pp.

SAN FRANCISCO, CALIF.—Capital Improvement Program, 1956-57 through 1961-62. Prepared by San Francisco Department of City Planning. Illus. Tables. Maps. 100 pp.

STURGIS, MICH.—A Guide For Development of the City and Its Environs, An Area Plan for Sturgis. 1955. Prepared by Sturgis Plan Board and Scott Bagby, City Planning Consultant. Feb. Maps. 58 pp. $5. (Send requests to Scott Bagby, 320 E. Fulton St., Grand Rapids, Mich.).

Public Safety

RICHMOND, CALIF.—Annual Report of the Richmond Fire Department, H. J. Schmidt, Fire Chief. 1955. Illus. Tables. 46 pp.

Sewerage

BUFFALO, N. Y.—Annual Report, 1954-1955. Prepared by Buffalo Sewer Authority, Frederick W. Crane, General Manager. Charts. Tables. 85 pp.

KENOSHA, WIS.—Annual Report. 1955. Prepared by the Sewage Treatment Plant, Frank I. Vilen, Superintendent. Charts. Unpaged.

Urban Renewal

GENERAL—FHA's Section 220 Mortgage Insurance for Urban Renewal. Issued jointly by Office of the Administrator, Federal Housing Administration & Urban Renewal Administration. 11 pp.

Water

AUBURN, MAINE—Annual Report for 1955. Prepared by the Trustees, Auburn Water District. Charts. 27 pp.

Milwaukee Suburbs Benefit from Income and Utility Taxes

THE STATE OF WISCONSIN collects taxes and returns 50% to the city, village, or town in which the taxpayer resides or in which the business firm taxed is located. Similarly, 65% of the property tax on utilities is returned to the locality in which the property is located.

In this way Wisconsin will support 45% of the total 1956 budgets of Milwaukee's suburban governments (excluding schools) and 27% of the similar Milwaukee budget. More than half of the civil expense of 13 suburbs will be thus financed, with Oak Creek being covered 100%, West Milwaukee 90%, and Granville 87%.

The communities benefitting largely from the income and public utility taxes usually have the lowest property tax rate. However, suburban communities often have fairly high property taxes for schools since 49 cents of every dollar budgeted in the suburbs goes for schools as compared with 33 cents of the Milwaukee city dollar.

"BEALE STREET BLUES"

W. C. Handy wrote many wonderful songs ("St. Louis Blues" among them) at his home on the corner of Beale and Third, Memphis, Tennessee. Here he wrote his famous and popular "Beale Street Blues." Like the ***FERRO*** signs now marking the spot, this song lives forever.

In many interesting locations you'll find ***FERRO*** signs . . . visible by day or by night; permanent porcelain enamel fused on finest steel. Fully embossed.

FERRO signs are manufactured by Ferro Enameling Company, only in its own factory. Processing, embossing and porcelain enameling are carefully and completely performed under one roof, to produce an entirely reliable and uniform sign.

On any street, road or highway, ***FERRO is the sign of good government.***

FREE BOOKLET

There are centuries of difference between genuine ***porcelain enamel*** and "baked," "paint" or other substitute "enamels." ***Genuine porcelain enamel*** lasts for centuries; won't "weather," won't fade. Get the facts. Write for free illustrated leaflet and with complete details. TODAY, fill in the coupon, paste on a postcard and mail.

FERRO ENAMELING COMPANY

Member: Porcelain Enamel Institute

1100 FIFTY-SEVENTH AVENUE
OAKLAND 21, CALIFORNIA

Please send me free leaflet and other information about your porcelain enamel signs.

*Name*_____

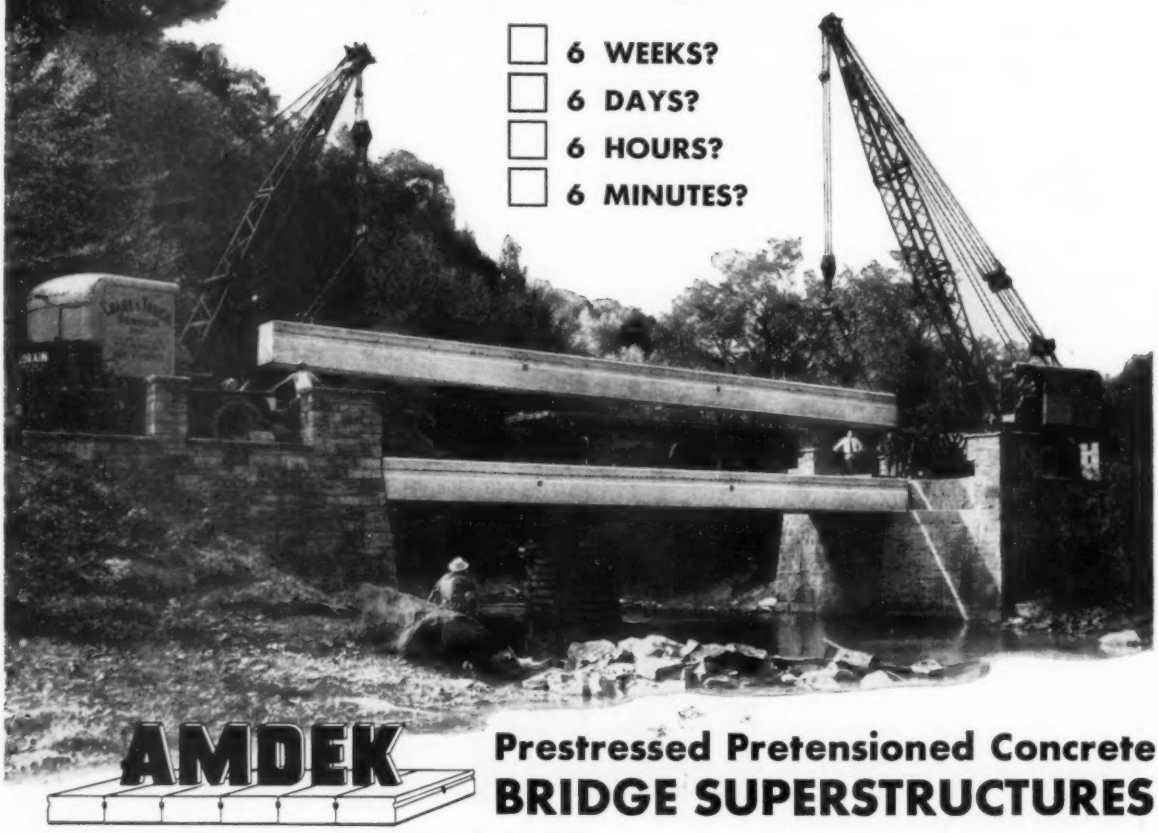
*Title*_____

*Office or Dept.*_____

*Street*_____

*City*_____ *Zone*____ *State*_____

How long to bridge this 62-foot span . . .



- ☐ 6 WEEKS?
- ☐ 6 DAYS?
- ☐ 6 HOURS?
- ☐ 6 MINUTES?

AMDEK Prestressed Pretensioned Concrete BRIDGE SUPERSTRUCTURES

6 HOURS! That's the remarkably short time it took a few workmen to span Laurelhill Creek near Somerset, Pennsylvania with the longest prestressed bridge in the state. Seven "factory-built" AMDEK sections were swung by cranes into position on offsets built into the old bridge abutments. After a few finishing touches, the bridge was ready for use!

Prestressing, pretensioning and vacuum processing—plus the use of special voids—results in a stronger, lighter bridge member that can be handled by contractors like steel beams—in any weather. You save time, cut costs—build beautiful bridges that give perfect, maintenance-free service for years! Find out more about AMDEK Bridges . . . write for literature and all details.

Qualified manufacturers will be accepted as licensees to produce AMDEK. Write for details.

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION

GENERAL OFFICES:
AMERICAN-MARIETTA BUILDING,
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS PHONE: WHITEHALL 4-5600

DIVISIONS AND SUBSIDIARIES

B. C. Concrete Company, Ltd.
Concrete Conduit Company
Tellyer Concrete Pipe Co.
Concrete Products Co. of America
Lamar Pipe and Tile Company
Lewistown Pipe Company
Universal Concrete Pipe Co.
American-Marietta Company of Pennsylvania

Irrigation—A Threat to City Water Supplies?

What effect does the booming demand for irrigation water have on the supplies used by cities and industry?

IS there enough water for everyone? The Indiana Section of the AWWA considered this question of sufficient importance to merit a panel discussion at its annual meeting, held recently in Indianapolis.

L. S. Finch, vice-president and chief engineer of the Indianapolis Water Company, opened the discussion and acted as moderator. Topics included water-use law, the importance of water in meeting public water supply and sewage disposal needs, irrigation, and flood control.

Paul Weir, newly elected President of the American Water Works Association, spoke on national aspects of water resources problems. Of special note is the increased popularity of irrigation in Indiana.

Irrigation Growth

According to records quoted by Donald R. Sisson, Agricultural Engineer, Purdue Extension Service, irrigation in Indiana has shown an increase of 500% in the past five years. Only 5,000 acres were under irrigation in 1950; in 1954, this figure had reached 23,000 acres, with an estimate of 32,000 acres scheduled for irrigation in 1955. Within ten years, approximately 80,000 acres will be farmed in this manner.

What makes this noteworthy is that Indiana usually has sufficient rainfall for normal crop production. Irrigation, as Mr. Sisson explains it, means more production per acre. For example, a five-year test on corn produced 60 bushels per acre on non-irrigated land as compared to 135 bushels per acre on irrigated land.

But what does this have to do with a municipal water supply? A great deal, for irrigation takes water from many of the same streams and rivers that serve as public water supplies. Very little of the water used for irrigation ever returns to the stream as run-off.

Water Demand

The amount of water needed per acre depends upon the crop, type of soil, and weather conditions. As an average, 9 inches per acre will be sufficient. This amounts to approximately 250,000 gallons per acre, or about 19 billion gallons for the 80,000 acres expected to be under irrigation by 1965.

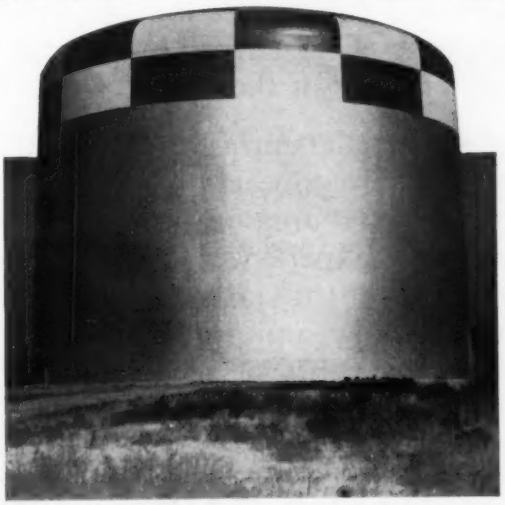
If used proportionately throughout the year, a daily supply of 52,000,000 gallons would be needed. However, practically all of this is needed during the three or four hottest months of the year when the streams are usually at their lowest flow and most water demands at their peak. Although some of the water comes from wells, a major portion is taken from the streams.

The discussion pointed out that

Specify **"ROSS" Automatic Valves**

FOLLOW THE LEAD OF THE ENGINEERS WHO SPECIFIED CONTROLS FOR THIS STANDPIPE FOR THE "SOUTH PITTSBURGH WATER CO." PITTSBURGH, PA.

WATER LEVEL IN THIS, "AMERICA'S LARGEST STANDPIPE," IS CONTROLLED BY A 20-INCH ROSS DOUBLE-ACTING ALTITUDE VALVE.



Pioneers in the manufacture of automatic hydraulic control valves, Ross has served the industry since 1879.

Valves manufactured include:

ALTITUDE—BACK PRESSURE—FLOAT
PRESSURE REDUCING—SURGE RELIEF—COMBINATION
with Hydraulic and Electric Pilot Controls

Ross Valve Manufacturing Co., Inc.
8 OAKWOOD AVE. TROY, N. Y.

BIG TREES *From Little* ACORNS

From a small beginning some 35 years ago, M & H Valve and Fittings Company has steadily grown to become a foremost producer in the valve and hydrant industry. M & H products today are widely used for water distribution and fire protection services in all sections of the United States and many other parts of the world.

This M & H leadership is no accident. It is due to the cooperation of a loyal M & H organization, working with experience, skill and a great enthusiasm, to consistently design and produce valves and hydrants of recognized superiority. Catalog 52 sent upon request.

M&H VALVE AND FITTINGS COMPANY
Anniston, Alabama

M&H PRODUCTS FOR WATER WORKS • FILTER PLANTS INDUSTRY • SEWAGE DISPOSAL AND FIRE PROTECTION

the increasing demands of irrigation can remove sufficient quantities of water from the streams and small rivers so as to materially affect downstream supplies. Besides domestic and industrial use, downstream supplies must be sufficient to properly handle sewage disposal, an important use that cannot be ignored.

B. A. Poole, director of the Bureau of Environmental Sanitation, Indiana State Board of Health, pointed out that sufficient water must remain in the stream to provide the necessary dilution of sewage, and this requirement varies with the amount of sewage and degree of treatment rendered.

Another Question Needs Answering

The question, "Is there enough water for everyone?" is important, but the problem of water rights and control is also in need of an answer.

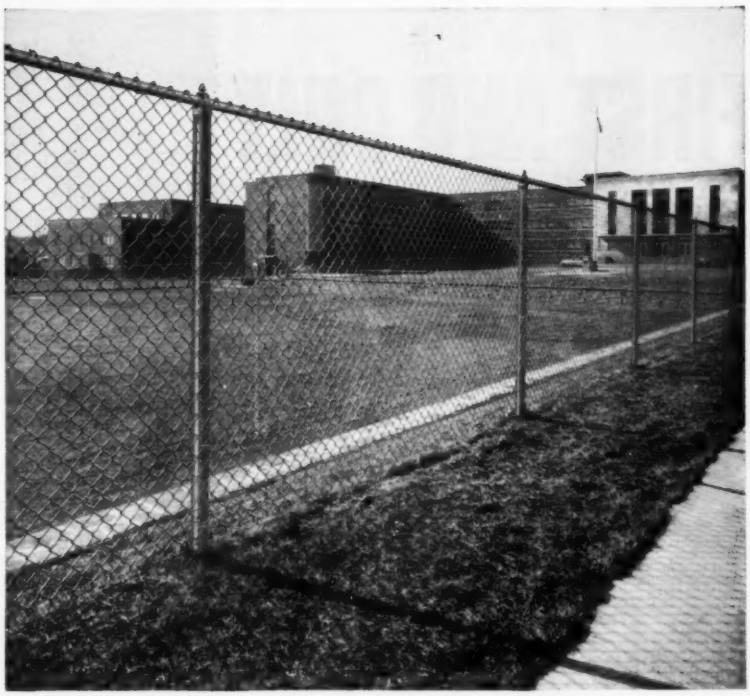
John H. Murdoch, Jr., General Counsel, American Water Service Company, covered this question as far as existing water right laws are concerned. That additional studies are needed was fully borne out during the discussion. The panel session closed with the thought that although not alarming, the problem certainly warrants the attention of water works men everywhere.

Flood and Disaster Aid Programs Advance in Congress

PROPOSED federal flood and disaster aid programs advanced another notch toward Congressional enactment last month when the Senate Banking Committee approved four bills providing flood insurance and other aids for individuals affected by natural emergencies. Final action on the bills will be welcomed by municipal officials who have been forced in the past to dig deeply into local treasuries to help disaster stricken families after local floods, hurricanes, tornadoes, etc.

One bill will set up a Federal Flood Insurance Administration authorized to issue insurance or reinsurance policies totaling up to $5 billion. Under the provisions of the bill, the federal government will contribute 40% of the cost of the premiums. Insurance will be limited to $250,000 per person and $10,000 per housing unit.

Other bills approved were: S. 2854, which will increase FHA mortgage insurance for disaster loans; S. 2955, which authorizes the federal govern-



Every school needs an Anchor Fence

Handsome Anchor Chain Link Fence provides safety and protection for both pupils and property. By day, Anchor keeps pupils safely inside—trespassers and unwanted animals stay out. At night, Anchor stands guard against vandals and intruders . . . helps preserve an orderly, well-kept appearance.

And this 24-hour protection is low-cost too. An Anchor Fence needs no annual painting or upkeep. Deep-driven anchors keep the fence erect and sturdy year after year in all kinds of weather and soil conditions.

Insist on *GENUINE* Anchor Fence

Look for the famous orange-and-black nameplate that means you're getting the finest chain link fence—the fence with the zinc coating applied *after* weaving, not *before*. For a free estimate or more information, call your local Anchor office or write: ANCHOR POST PRODUCTS, INC., *Fence Division*, 6905 Eastern Avenue, Baltimore 24, Maryland.

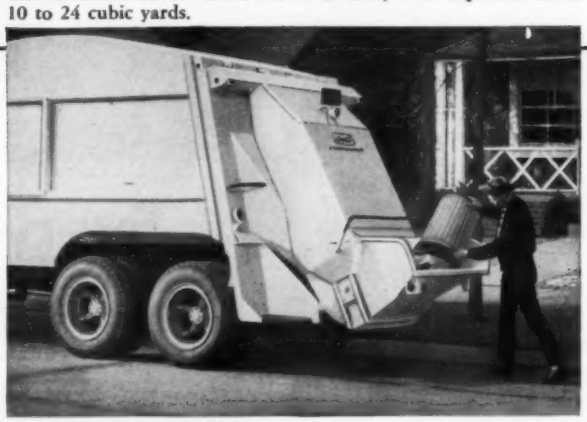
Anchor Fence®

Division of ANCHOR POST PRODUCTS, *Inc.*

Plants in: Baltimore, Maryland; Houston, Texas, and Los Angeles, California.
Branches and Warehouses in all principal cities.

FIRST AND ONLY COMPLETE LINE *of Refuse Collection Equipment!*

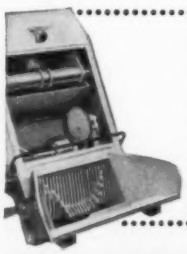
LOAD-PACKERS® The original packing-type refuse collection units! Preferred by over 2600 municipalities for fast loading, positive compaction, low maintenance costs, better service. Fully hydraulic for long life . . . fully enclosed for greater sanitation. Unmatched for narrow alley operation. Write for booklet W-171 that describes all six Load-Packer models, with capacities from 10 to 24 cubic yards.



SPEED-PACKERS® First continuous loader that crushes, shreds and compacts to handle far greater payloads! Non-selective... handles tires, lumber, concrete blocks, tree limbs, anything the Speed-Packer can get its 46 teeth into. Exceptionally low maintenance costs . . combines speed with safety. New 16 and 20 cubic yard models are described in booklet W-195. Write for your copy.

Never before has it been so easy to add new collection equipment to your present fleet! You can choose from one complete line of sizes and types to meet your exact municipality or private contractor requirements. All models are built and backed by Gar Wood, the originators of packing-type collection equipment. All are designed for low maintenance costs . . . many parts are interchangeable. All are sold and serviced by one world-wide organization of leading truck equipment distributors.

Find out how you can best meet the growing collection needs of your municipality with the world's first and only complete line of equipment. Call your Gar Wood-St. Paul truck equipment distributor, or write to: Customer Service Department, Gar Wood Industries, Inc., Wayne, Michigan.



NEW SPEED-PACKER TAILGATE Available as Replacement Part!

Your present LP-216 and LP-220 Model Load-Packers can be easily converted into continuous loaders. Ask your dealer about Gar Wood's revolutionary Speed-Packer Conversion Plan.

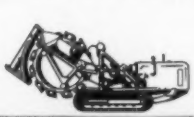
GAR WOOD INDUSTRIES, INC.

Wayne, Michigan • Richmond, California

Plants in Wayne and Ypsilanti, Mich.; Findlay, Ohio; Mattoon, Ill., Richmond, Calif.

GarWood

Gar Wood-St. Paul Hoists & Bodies



Gar Wood-Buckeye Ditchers

Gar Wood Winches

Gar Wood-Buckeye Spreaders

ment to stockpile temporary housing for disaster relief and S. 2859, authorizing the development of rent-free emergency housing for disaster victims.

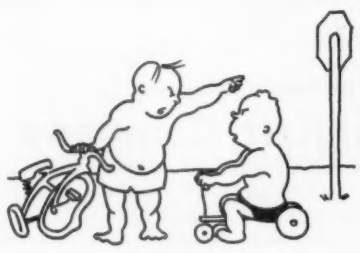
National Award Set Up for Local Assessment Achievements

THE ASSESSING office in your city or town will now be eligible for a national award that recognizes outstanding assessment achievements according to a recent announcement by the National Association of Assessing Officers.

As revealed by Wilton T. Allen, Supervisor of Assessments in Rockville, Md., and President of NAAO, the award will be conferred each year on the local assessing office or department "that makes the year's outstanding achievement in the matter of organization, personnel, procedure, or technique." The establishment of the award was made on the basis of a recommendation from Herbert K. Shay, Town Assessor, Fairfield, Conn.; David A. Brown, Property Assessment Supervisor, Augusta, Maine, and John G. Arthus, Director, Department of Assessments, Baltimore, Md.

The award will be conferred each year at NAAO's annual meeting on the basis of recommendations for candidates received from Association members in their respective states, provinces, and territories.

The Association also announced that it will confer an additional award on the member from its own ranks who does the most effective work in promoting the interests of the nationwide assessor's organization. A third award will be made to that organization, agency, or body (public or private) which gives the most effective assistance to the cause of assessment administration.



goes *anywhere*

the **F&P**

Portable CHLORINATOR

Here's the answer to emergency or field construction chlorination—the Fischer & Porter *portable* chlorinator.

Readily moved by man or boy, it is a reliable stand-by chlorinator; anywhere, anytime. Can be conveniently transported by automobile, by airplane, or on foot to locations inaccessible to vehicles. Contractors find it indispensable for disinfecting new and old pipelines, municipalities use it for standby plant operation, emergency flood or field chlorination.

Employs the same rugged construction and safe, efficient, positive instrument-type controls used so successfully in the larger F&P chlorinators. Fully enclosed in tough, light Fiberglas cabinet, the entire unit is impervious to corrosion. Weighs less than forty pounds. Write today for complete information.

- **SAFETY**—built-in positive acting safety devices.
- **SIMPLICITY**—does not require highly skilled personnel to operate.
- **MAINTENANCE-FREE**—constructed entirely of materials inert to corrosion by dry or wet chlorine.
- **WIDE RANGE**—standard 10 to 1 overlapping flow ranges from 0.1 to 1000 PPD chlorine.
- **EASY TO CHANGE CAPACITY**—Converts to higher or lower flow ranges in minutes without special tools.

FP FISCHER & PORTER COMPANY

FISCHER ROAD, HATBORO, PENNA.

FISCHER & PORTER CO.
756 Fischer Road, Hatboro, Pa.

Please send complete information on your portable chlorinator.

Name_____ Title_____

Organization_____

Address_____

City_____ State_____

BIG NEWS in road maintenance:

COLD APPLIED

BITUMULS®

Slurry Seal

Spreader-box application of Bitumuls Slurry is fast and easy.

BITUMULS SLURRY SEAL is a fast, simple, and highly effective technique for getting extra years of satisfactory service out of cracked, worn, or spalled pavements.

The slurry, itself, consists of a mixture of Bitumuls emulsified asphalt and water to which sand or crusher dust (or a combination of both) is added to form a free flowing mix.

Typical Slurry Preparation

On a typical successful operation, the Bitumuls emulsion and water were first fed into the drum of a transit mix truck. Then aggregate, conforming to the following gradation, was added slowly to assure complete coating:

Sieve Sizes	*Per cent Passing*
Number 20	100
" 30	91
" 50	54
" 100	20
" 200	5

Method Of Application

The slurry, delivered to the job in the transit mixer, was chuted into a spreader box, towed behind the mixer truck, onto the pre-watered pavement. (The spreader box was a rectangular, sled-like frame, one traffic lane in width. It was equipped with a rubber strike off, or squeegee blade, which assured even distribution and uniform coating, and forced the slurry into cracks and depressions.)

Pioneered In The West

Quickly and easily applied at exceptionally low costs, Bitumuls slurry sets rapidly and can usually be opened to traffic within two to three hours.

This method was pioneered by Los Angeles County forces. Working closely with them were Engineers of American Bitumuls & Asphalt Company.

Bitumuls Slurry Seal has been used effectively in both Southern and Northern California, and test sections have been placed in other areas of the country. The "big news" of this relatively new method of extending pavement surface life is spreading fast. Get full data from our nearest office.

Aggregate and Bitumuls are fed into transit mix truck, then water is added as required.

Close-up view of the specially-designed spreader-box.

Leading Marketers of Asphalts, Cutbacks, and Emulsions — Nationwide.

American Bitumuls & Asphalt Company

200 BUSH STREET, SAN FRANCISCO 20, CALIFORNIA • Perth Amboy, N. J. • Baltimore 3, Md.
Cincinnati 38, Ohio • Columbus 15, Ohio • Mobile, Ala. • Tucson, Ariz • Seattle, Wash.
Baton Rouge 2, La. • St. Louis 17, Mo. • Inglewood, Calif. • Oakland 1, Calif.
Portland 7, Ore. • Washington 5, D.C. • San Juan 23, P. R.

Conventions—When and Where

(Continued from page 211)

***Sept. 19-21—Columbus, Ohio**
OHIO MUNICIPAL LEAGUE. Annual Convention. Acting Dir., J. E. Gotherman, 85 S. Grant Ave., Columbus, Ohio.

***Sept. 19-21—Atlanta, Ga.**
GEORGIA WATER AND SEWAGE ASSOCIATION. Annual Meeting (Georgia Institute of Technology). Sec.-Treas., A. T. Storey, 1210 Hemphill Ave., N. W., Atlanta, Ga.

***Sept. 19-21—Aberdeen, S. D.**
SOUTH DAKOTA WATER AND SEWAGE WORKS CONFERENCE. Annual Meeting (Hotel Sherman). Exec. Sec., Charles E. Carl, Director, Division of Sanitary Engineering, State Health Department, Pierre, S. D.

***Sept. 20-22—Grand Forks, N. D.**
LEAGUE OF SOUTH DAKOTA MUNICIPALITIES. Annual Convention (Hotel Decotah). Exec. Sec., Mrs. Roberta B. McCreery, 408½ Main Ave., Bismarck, N. D.

Sept. 23-26—Fort Worth, Texas
AMERICAN PUBLIC WORKS ASSOCIATION. Public Works Congress and Equipment Show (Will Rogers Memorial Auditorium and Coliseum and Exhibit Bldg.). Exec. Sec., D. F. Herrick, 1313 E. 60th St., Chicago 37, Ill.

***Sept. 26-28—LaCrosse, Wis.**
AMERICAN WATER WORKS ASSOCIATION—Wisconsin Section. Annual Meeting (Hotel Stoddard). Exec. Sec., Superintendent of Waterworks, City Hall, Madison 3, Wis.

Sept. 26-29—San Francisco, Calif.
INSTITUTE OF TRAFFIC ENGINEERS. Annual Convention. Exec. Sec., M. Mansfield Todd, 211 Strathcona Hall, New Haven 11, Conn.

Oct. 5—Philadelphia, Pa.
NATIONAL RECREATION ASSOCIATION OF THE UNITED STATES. International Recreation Congress (Bellevue-Stratford Hotel). For further information address Robert R. Gamble, Asst. Secretary General, IRC, United Nations Plaza and 46th St., New York 17, N. Y.

Oct. 7-11—Washington, D. C.
ASSOCIATION OF SCHOOL BUSINESS OFFICIALS OF THE UNITED STATES AND CANADA. Annual Convention (Sheraton-Park Hotel). Sec.-Treas., H. W. Anderson, 703 Kalamazoo Bldg., Kalamazoo, Mich.

Oct. 8-11—Los Angeles, Calif.
FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATIONS. Annual Convention (Hotel Statler). Exec. Sec.—Editor, Ralph E. Fuhrman, 325-26 Illinois Bldg., Champaign, Ill.

Oct. 9-12—Atlanta, Ga.
UNITED STATES CIVIL DEFENSE COUNCIL. Annual Conference (Biltmore Hotel). Sec.—Exhibit Mgr., George F. Arnold, 181 S. Washington Blvd., Columbus, Ohio.

Oct. 14-17—Chicago, Ill.
NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING. Annual Conference and Products Exhibit (Hotel Conrad Hilton). Exec. Vice-Pres., Albert H. Hall, 1001 Connecticut Ave., Washington 6, D. C.

Oct. 15-17—Rye, N. Y.
GOVERNMENTAL RESEARCH ASSOCIATION. Annual Conference (Westchester Country Club). Sec., Elsie V. Haas, 684 Park Ave., New York 21, N. Y.

Nov. 12-15—Miami, Fla.
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual Conference (Biscayne Terrace Hotel). Sec.-Mgr., B. Richter Townsend, Hotel Martinique, Broadway at 32nd St., New York 1, N. Y.

Jan. 28-Feb. 2, 1957—Chicago, Ill.
AMERICAN ROAD BUILDERS' ASSOCIATION. Annual Convention and Road Show (Chicago Amphitheater). For further information address the ARBA, World Center Bldg., Washington 6, D. C.

Municipal Water Filter Installation cost can be cut 1/2 to 1/3 with...

SPARKLER *Diatomite* **FILTERS**

Engineers in charge of new Municipal Water Works filtration systems are more and more favoring the SPARKLER DIATOMITE FILTER MODEL SCJ because:—

1. The original cost of a diatomite plant for public supply is ½ to ⅓ the cost of a sand plant of equal capacity.
2. Diatomite filtration reduces the chlorine demand of the water by removing organic matter to an exceptionally high degree. The overall bacteria reduction in the effluent is from 80% to 90%. Sterilization of the finished water can be accomplished with much less chlorine. This results in reducing consumer complaint due to chlorinous tastes.
3. Turbidity less than 5 P.P.M. can easily be maintained at all times even though the raw supply fluctuates greatly. Channeling, mud balling and other common sand filter shortcomings are never a problem.
4. Operating cost compares favorably with conventional sand.

Less than 0.2% of water is required to sluice and clean the Model SCJ filter. The largest filter units can be cleaned and a new fresh diatomite pre-coat applied and the filter back in operation in 20 minutes or less.

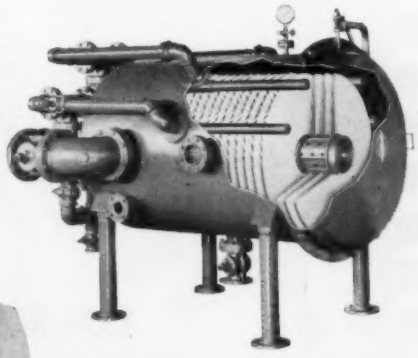
Operators can be easily trained to handle this filter, no highly skilled specialized personnel is required to insure efficient performance.

Sparkler Model SCJ filters can supply practically any required volume of city water. Single units with a capacity of 5,000,000 gal. per day are available. Multiple units including a standby filter is usually employed to insure uninterrupted service for large volume requirements.

Modern electronic control instruments are readily adaptable to these filters, making uniform high quality water supply sure and automatic.

The startlingly low original cost, simple operation, and positive, consistent high quality filtration makes the Sparkler Municipal Water Works filtration system worthy of the most thorough consideration by water works engineers.

Interior construction of Model SCJ Water Filter. Sparkler filtration engineers have introduced, in the SCJ filter, new principles of diatomite filtering that are much superior to old methods and comprise the most advanced innovations in recent years.



SPARKLER FILTERS

SPARKLER MFG. CO., MUNDELEIN, ILL.
Sparkler International Ltd. with plants in Canada, Holland, Italy and Australia — Service representatives in principal cities throughout the world.

FILTRATION ENGINEERING AND MANUFACTURING EXCLUSIVELY FOR OVER 35 YEARS.

TOUGH Traffic-Tested NEFSLABS®

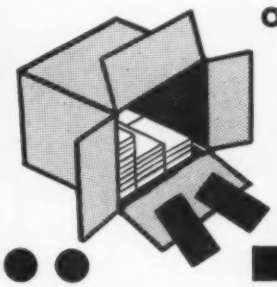
PROVE BETTER 25 to 1!

WHERE: City of Philadelphia, on uneven Belgian blocks and under heavy traffic. WHEN: Nearly **two years** ago . . . and **still** there! WHY: Many painted lines required renewing in about three weeks. Therefore, this rigorous continuing test proves that these **tough, flexible, plastic** traffic markers have **excellent** wearing quality for even the roughest conditions.

NEFSLABS are available in a **wide** variety of shapes, sizes, thicknesses, and colors . . . plus reflectivity down to the **last** scuff!

SOME OTHER USES . . .

Equal satisfaction has been enjoyed in **many** large cities throughout the United States and foreign countries. **Nefslabs** have been used **successfully** in Pittsburgh, Pa., Alexandria and Norfolk, Va., Clarksville, Tenn., Green Bay, Wisc., Hartford, Conn., Summit, Ill., Boston, Mass., Montreal, Canada, and numerous other cities. **Still other** installations have been made in industrial plants, gas stations, parking lots, airfields, and shipyards.



OUTSTANDING QUALITIES . . CONTINUOUS SERVICE!

The **tough flexible** properties of **Nefslabs** are coupled with the **good** adhesive qualities of **cold, quick-setting Nefglu** which bonds the markers **securely** to concrete, asphalt, brick, Belgian block, and wood industrial floors. This **long life** economical combination of **top-quality** products meets almost **any** traffic requirement at a **considerable saving** over painted lines.

Write for literature and price list.

Inquiries invited from Sales Representatives for open territories.

J. W. NEFF LABORATORIES, INC.

STOCKERTOWN 5, PENNSYLVANIA

Public Safety

Philadelphia First In Fire Prevention

FOR the third consecutive year, Philadelphia, Pa., leads the nation's major cities in fire-prevention education and promotion and for the second time in three years has captured the Grand Award in competition with 2,000 cities.

Highlights of Program

Highlights of Philadelphia's fire safety program which figured in the capture of the Grand Award were: the Fire Department's Fire Prevention Task Force, a nine-man unit which spends full time teaching prevention; parades of fire-fighting equipment, fire safety floats and displays, and the gaily-garbed Police and Firemen's Band through neighborhood areas; the vital "fire-check" inspection of multiple-occupancy dwellings and commercial firms by active fire-fighting units to uncover potential fire starters; the unique Junior Fire Departments in public and parochial schools designed to teach school children the importance of fire prevention.

Grand Award plaque presentation to the City of Philadelphia. Left to right are: T. Seddon Duke, President of the National Fire Protection Association; Percy Bugbee, General Manager of NFPA; Frank L. McNamee, Fire Commissioner of Philadelphia; George E. Hink, Deputy Fire Commissioner and Fire Chief of Philadelphia.

Smithtown's New Fire House

SMITHTOWN, N. Y. has a new fire house that has caused some interested comment. The principal architectural characteristic of the building is the separation in plan between the fire-fighting unit, that is the garage, and the recreational unit which is so necessary for the morale of a volunteer department. The recreation or social unit consists, at the lower level, of a ready room, kitchen, chief's office, lavatories and an apartment for the houseman. On the second story are the social hall and the meeting rooms.

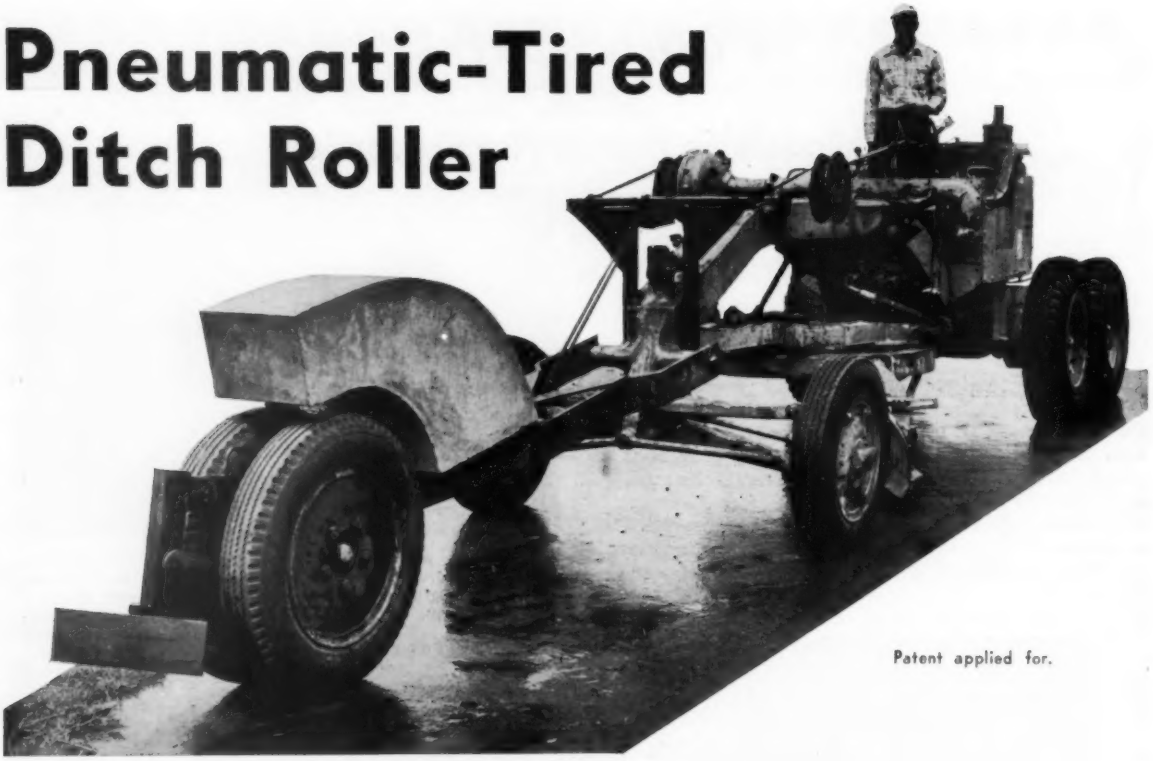
The bond issue was for $330,000 based on an estimated building coost of $265,000 or $1.30 per cubic foot. Michael M. Hare, the architect, advises that the actual cost was $1.08 per cubic foot or $13.50 per square foot.

The building was designed by Messrs. Michael Hare and Araldo Cossutta of the architectural firm of Michael Hare and Associates, located at 125 Broad St., New York 4, N. Y.

Mr. Hare called attention to the wholehearted support accorded this fire house design by the Board of Fire Commissioners, whose members are Earl R. Scott, chairman; Robert Weiss, secretary-treasurer; Louis B. Brentson, G. Everett Hand, John Keyes, and George A. Wilson.

New volunteer fire station segregates apparatus floor and social facilities

Pneumatic-Tired Ditch Roller



Patent applied for.

The ditch with the uncompacted backfill need no longer haunt municipal officials who have seen expensive pavements ruined, taxpayers become irate and lawsuits filed all because of settlement in a poorly backfilled trench for a water or sewer line.

This ingenious rubber-tired roller attachment positively insures that the backfilling in the ditch will be compact and thorough. A pair of pneumatic truck-tires does the rolling, helped by a concrete weight of 1,650 pounds. It can operate in a trench as deep as six feet. Experience records show that when it compacts trench backfill in 6-inch lifts it produces 100% compaction.

- The roller can be attached to any Caterpillar patrol graders, models 212, 112 or 12. It can be connected to the controls of the grader so that the operator can lower the roller into the ditch or lift it out without difficulty.
- It has an adjustable blade on the front that levels the lift being compacted. The blade can be turned to the right, or the left, or it can be set to bulldoze straight ahead.
- The roller attachment is particularly effective in backfilling trenches cut the length of paved streets where thorough and consistent compaction is vital. It also works well on backfill for transmission mains in open country.
- The roller can further be used to compact the subgrade for street widening or curb-and gutter paving, or sidewalks.

For full details on this roller attachment, plus a record of its accomplishments, please contact

JOHN R. COOK

P. O. BOX 597, AUGUSTA, GA.

Purchasing News

Information for officials interested in equipment and services for the construction, operation and maintenance of municipal utilities

Key Points in Incinerator Furnaces

Features of municipal incinerators that the American Engineering Co. feels are essential are:

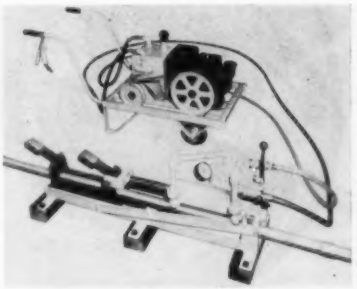
- Large dump plates to assure free discharge of burned material to the ash hoppers.
- Hydraulically - operated grates and dump plates.
- Grates embodying proved principles of combustion engineering.
- Special features to prevent damage or service interruption.

The company states that its incinerator furnaces make use of these special features. Burned material can slip through the large dump plates easily. The hydraulically - operated grates and dump plates are designed by specialists whose hydraulically - operated steering gears guide sea-going vessels. The grates themselves are designed by engineers with a long record of successful grate and stoker installations in difficult burning equipment.

The company is ready to supply detailed information relating to incinerator requirements for individual cities. Write AMERICAN ENGINEERING CO., DEPT. S-108, WHEATSHEAF LANE & SEPVIA ST., PHILADELPHIA 37, PA., or you may use the Post Card on the insert following Page 34. Circle No. 950.

Speeds Installation of Water, Sewage Pipe

The Giant hydraulic pipe pusher for installing water, sewage and gas pipe underground is now available in two sizes. The new Model PH-2 will handle pipe ½ through 1¼ inches in diameter, and the Model PH-3 will install pipe ¾ to 2 inches in diameter. Both are available from the GIANT MFG. CO., 6TH ST. AT 12TH AVE., COUNCIL BLUFFS. IA.

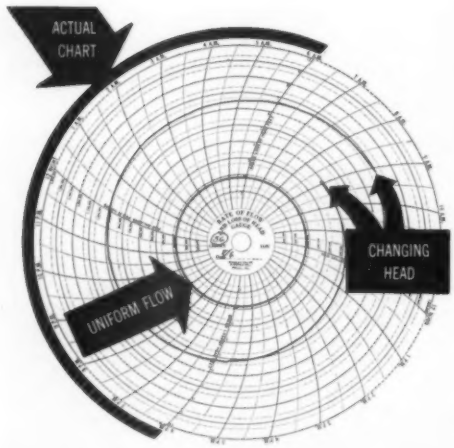


Using the Model PH-3, over 100 feet of 2-inch pipe can be installed in one hour. The Giant hydraulic power unit does all the hard labor. A simple push

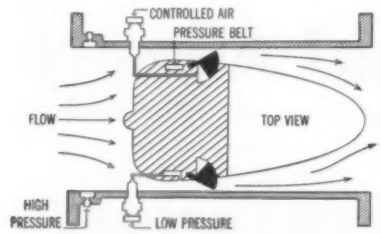
New York's
International Airport
at Idlewild
relies on UNITED
Waste Receptacles!
PUSH
...world's largest manufacturer of metal waste receptacles
UNITED METAL CABINET CORPORATION
14th & Laurel Sts., Pottsville, Pa.
West Coast Distributor: SHORE-CALNEVAR, INC., 2881 East Pico Blvd., Los Angeles, Calif.
WRITE FOR FREE DESCRIPTIVE LITERATURE

NEW SIMPLEX FILTER RATE CONTROLLER GIVES YOU COMPLETELY PNEUMATIC CONTROL!

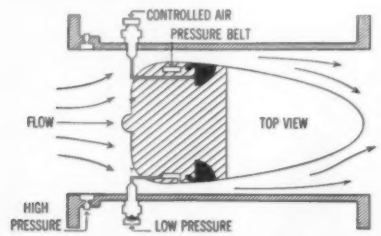
Amazing Modulair® Controller responds fast . . . closes tight



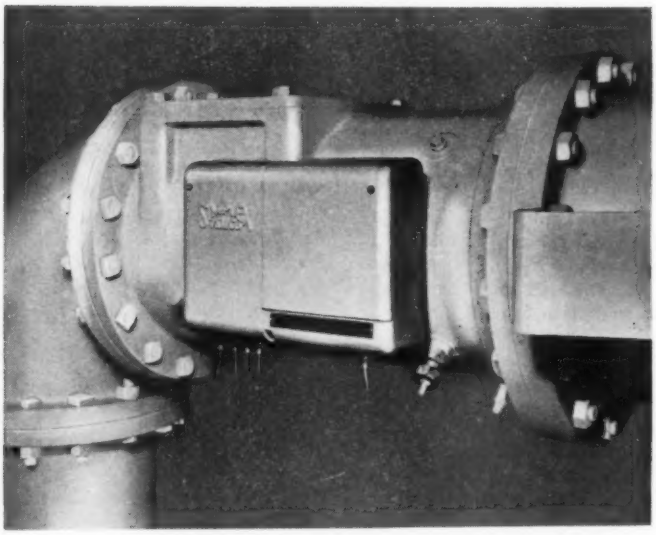
Here's proof that the new Simplex Modulair Filter Rate Controller responds instantly to changes in filter head, holds flow at desired rate . . . automatically! In chart from Modulair installation No. 2, head changes from 4′ to 7′ while rate forms almost perfect circle at the set 275,000 gpd.



How Modulair works! Pipe-like casting with annular Venturi throat houses streamlined inner body with corded-rubber modulator (black) that expands and retracts pneumatically to control flow. When head is low at start of run, modulator expands automatically to hold flow at set rate.



As filter head loss rises, flow tends to decrease . . . and change the Venturi differential. Sensitive Modulair compensates by instantly retracting the pneumatic modulator, maintaining a constant head-loss value through the combined filter and controller, automatically keeping flow at set rate!



Compact . . . easily installed Modulair is only two to three pipe diameters long! It fits wherever a piece of pipe can fit . . . in any position, horizontal or vertical . . . simplifying pipe gallery layout. High-grade, cast iron Modulair comes in 4″ to 24″ standard pipe sizes with corrosion-resisting fittings. Cord-inserted rubber throttling element that's as tough as a truck tire has given 30 years' wear in accelerated life-tests.

Accuracy! In 4 years of field performance, Modulair charts show an accuracy in filter control that exceeds today's most exacting demands. This high degree of control extends for wide ranges of head loss and flow rates, including complete, tight shut-off! And there's no drift at end of run.

Longer filter runs! Modulair combines a low head-loss, annular Venturi measuring element with a streamlined throttling element. This new design offers so little resistance to flow that you get longer filter runs, big savings in wash water!

Minimize maintenance! With Modulair's new design, there's no place for air to accumulate . . . no place for sand to lodge and interfere with accuracy. Throttling element, the only moving part inside pipeline, is non-corrosive rubber. Pneumatic poise element is simple, rugged. There are no line valves, no pilot valves, no pistons, no valve shafts, no stuffing boxes to pack!

Lower first cost! Modulair's low head loss means lower operating head requirements . . . permits vertical compression in plant design and lower costs in plant construction.

Completely pneumatic! No intermediate hydraulic steps! No pilot valves! No hydraulic cylinders! Air loading pressure is applied *directly* to the flow controlling element.

Automatic filter operation! Modulair works with control systems of any type to give you remote rate control or master pneumatic control that's fully automatic.

Technical bulletin! For full details on Modulair, write for Bulletin 950. Simplex Valve & Meter Company, Dept. AC-5, 7 East Orange Street, Lancaster, Penna.

Accurate instruments and controls for over 50 years

SIMPLEX®

VALVE AND METER COMPANY

or pull of the valve puts the machine to work.

The specially designed jaws of the pusher automatically grip the pipe, and automatically release when the piston retracts. No special pushing rods are required.

The Giant power unit is furnished complete with an aluminum Briggs & Stratton gasoline engine and two 18-foot oil line hoses with quick disconnects. Additional 18-foot lengths are available.

Both models, the PH-2 and PH-3, are described in a new bulletin. For your copy, write the company directly, or you may use the Post Card on the insert following Page 34. Circle No. 949.

Tubular Folding Chairs

Use these "No Pinch" tubular folding chairs in school auditoriums, park malls, lunchrooms and wherever immediate seating is required. Five models are available, including a steel saddle seat, plywood seat, plywood saddle seat, pad seat, and upholstered pad back. These are furnished in a choice of six luxurious baked-enamel finishes.

Each chair features "No Pinch" folding brackets and molded rubber shoes on metal cups. These cups are welded

to the ends of the leg tubes to prevent floor marring.

Details and prices on "No Pinch" tubular folding chairs may be obtained from the WILCOX-GAY CORP., 743 N. LA-SALLE ST., CHICAGO 10, ILL. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 946.

BIG GUILLOTINE
THE NEW WACHS
POWER PIPE SAW
No Flame—Safe Cuts Under Hazardous Conditions!
FASTER—SAFER—ACCURATE!
Cuts 10", 12", 14" & 16"
Cast Iron and Steel Pipe
WACHS BIG GUILLOTINE SAW FACTS—
- Cuts Fast
- Cuts Clean
- Cuts Square
- Height 31"
- Width 31½"
- Depth 14½"
- Set up time, several minutes
- Power—electric or air motor
- Weight 312 pounds

Power Pipe Cutters from 2 inch to 6 Foot Capacity
For further information write to:
THE E. H. WACHS COMPANY
1525 N. Dayton Street • Chicago 22, Illinois

STOP WATER-BORING! MINIMIZE TRENCHING!

PUSH PIPE

SAVE
AMERICA'S STREETS AND HIGHWAYS

Typical Case Histories

March 5, 1956
National Jewish Hospital, Denver
Contractor: HOWARD ELECTRIC CO.
45 feet of 3" rigid conduit for telephone cables under lawn, sidewalk and street to open manhole.
1 MAN—20 MINUTES

October 5, 1953
City Westminster, Colo.
Contractor: A. F. PLUMBING CO.
Six ¾" copper water services installed at separate locations in one day. 30 ft. pushes of 1¼" pipe and copper tubing pulled through.
1 MAN—8 HOURS

November 7, 1952
Fitzsimons Army Hospital, Denver
Contractor: ARROW ELECTRIC CO.
2,158 feet of 1½" and 2" conduit for street lighting system. Fifty pushes under streets. Longest, 186' and 120'.
2 MEN—40 HOURS

COMPLETELY POWERED
SPEED-THRU
The World's Fastest
PIPE PUSHER

U. S. PATENT NO. 2,656,148

DELIVERED COMPLETE:
With Gas, Electric, or Truck Power Units as desired. All connections. Nothing extra to buy.

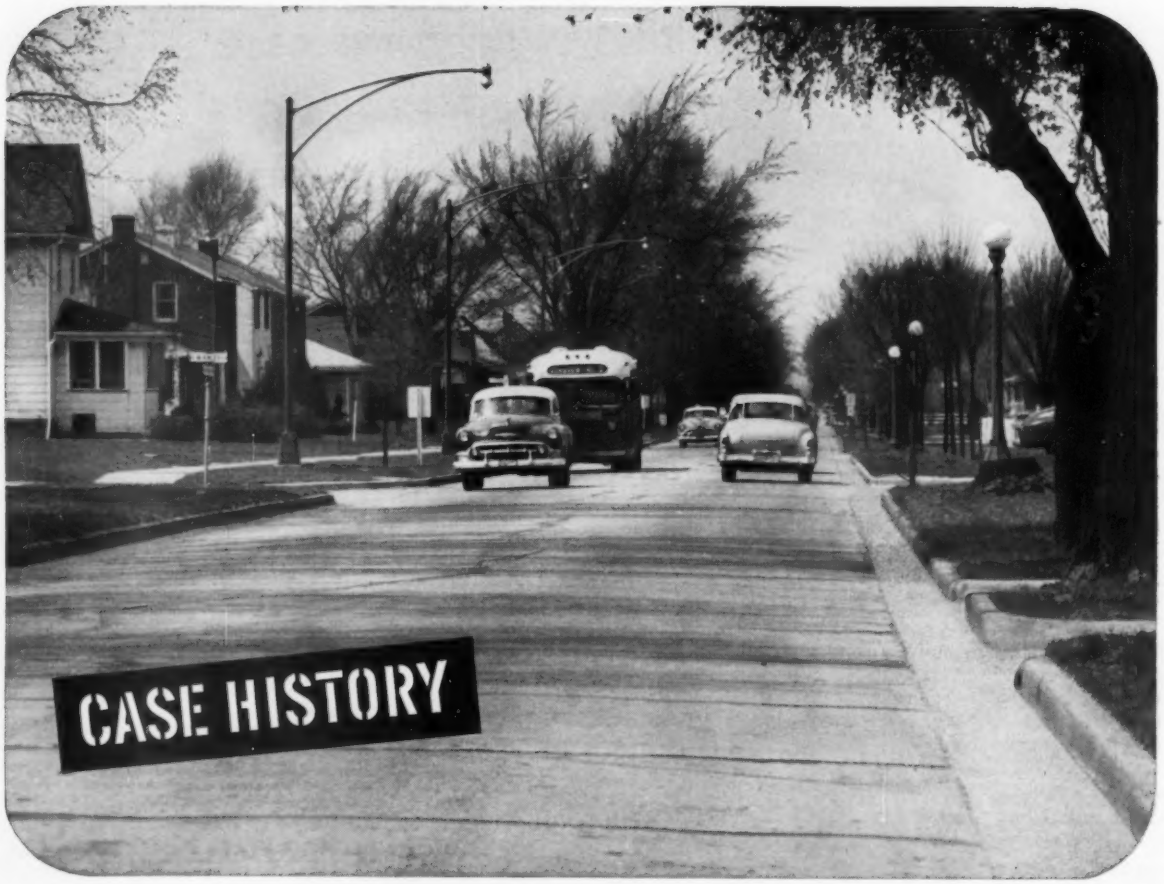
ONE MAN OPERATES TWO CONTROLS

Revolutionizes Underground Installation
PUSHES OR PULLS WITH CONTINUOUS 21 INCH HYDRAULIC POWERED STROKES

Simplest . . . fastest . . . most economical installations beneath streets, highways, railroads, lawns, landscaping.

GET THE COMPLETE STORY OF SPEED-THRU 5 YEAR PERFORMANCES
Write Today for Brochure "P."

MERCURY HYDRAULICS, INC.
2440 Blake St. Denver 5, Colo.



Property Owners benefit greatly by low-annual-cost service of CONCRETE streets

This is a recent photograph of West Springfield Avenue in Champaign, Ill. The street was paved with concrete in 1922. Now 33 years old, it is a a typical example of the long and economical service rendered by hundreds of miles of concrete streets in all parts of the country.

Today, West Springfield Avenue carries heavy truck, bus and passenger car traffic year in and year out. Like many other veteran streets it is carrying much more and much heavier traffic than could have been foreseen by its designers more than a generation ago.

The cost record of this street exemplifies the economy of concrete pavement. When Springfield Avenue was paved the average lot owner's assessment was $512, including interest. To date the annual cost has been less than $16 per lot. By the time the pavement has served out its life the annual cost will be even lower.

Concrete's ***low-annual-cost*** service is only one reason it is preferred by both public officials and property owners. Concrete streets are also much safer. Their gritty, highly skid-resistant surface grips tires better, permits quicker, safer stops, wet or dry. And concrete's light color, reflecting up to four times more light than dark pavements, not only reduces street lighting costs but also makes residential areas safer for motorists and pedestrians alike. Finally, concrete streets increase property values by "dressing-up" the whole neighborhood with their neat, clean appearance.

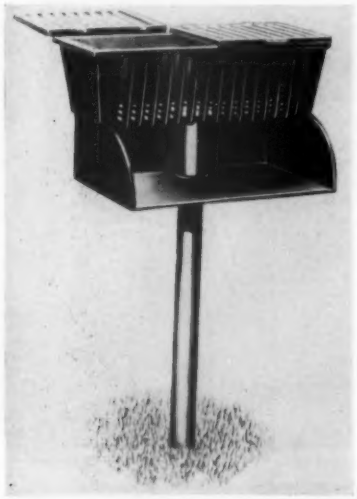
For more information about long-lasting, safe, low-annual-cost concrete streets, write for free literature, distributed only in the U.S. and Canada.

PORTLAND CEMENT ASSOCIATION Dept. 5-4, 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

Sturdy Grill for Parks and Picnic Areas

Make parks and picnic areas a pleasant place to relax by installing these low-cost cooking grills. The grills are constructed of cast iron, won't rust or warp, and provide even heat distribution. An undertray catches ashes to keep the area clean. The complete unit rotates on a



pipe stand so that it may be turned into the wind, producing a forced draft and keeping smoke out of the cook's eyes.

The top grate of the Grilladier is at a convenient height for cooking, and is hinged to double the cooking-warming area. A firebox provides efficient and economical capacity for either charcoal or wood.

The Grilladier is available with a simple pipe stand for permanent installation in concrete, or with a transportable cast-iron circular base.

For prices and other details, write BENNETT-IRELAND, INC., 14 EXCHANGE ST., NORWICH, N. Y., or you may use the Post Card located for you convenience on the insert following Page 34. Circle No. 947.

Brooks Moves to El Monte, Calif.

Brooks Products, Inc., formerly of Pasadena, Calif., has moved its offices to Rockwell and Olney, El Monte, according to a recent announcement. Brooks manufactures concrete valve and meter boxes, benches, and other pre-cast concrete products.

KENNEDY A.W.W.A. Gate Valves Give You More Value For Your Valve Dollar...

O-Ring Seals

Provide excellent seal, prevent binding of stem and result in very easy valve operation. KENNEDY O-Rings are located above collar, permit repacking under pressure. Optional on KENNEDY non-rising stem A.W.W.A. valves.

Stronger Construction

Rugged design and construction features iron that is 50% stronger than ordinary cast iron to keep KENNEDY Valves doing a better job over a longer, more dependable operating life.

KENNEDY Fig. 56
A. W. W. A. Standard Iron-Body Double-Disc Gate Valve, with Bell Ends.

KENNEDY manufactures a complete line of water works valves. Sizes range from 2" to 48" including non-rising stem and outside-screw-and-yoke valves. These valves feature the hook-and-wedge type disc mechanism for easier, better and more positive valve operation. A wide variety of pipe connections are available.

For maximum service life, for the greatest value for your valve dollar, specify KENNEDY valves and fire hydrants. Remember, KENNEDY means dependability in valves, fire hydrants and accessories.

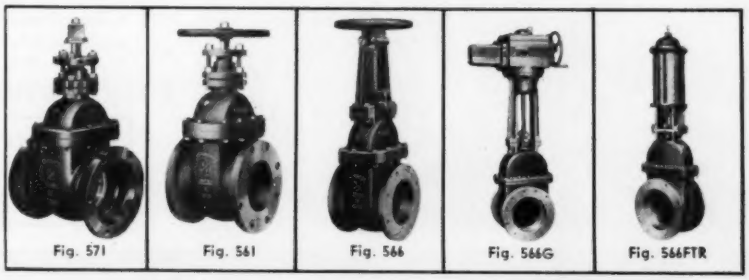


Fig. 571 | Fig. 561 | Fig. 566 | Fig. 566G | Fig. 566FTR

Write today for NEW A.W.W.A. Valve Bulletin

THE KENNEDY VALVE MFG. CO. • ELMIRA, N. Y.
VALVES • PIPE FITTINGS • FIRE HYDRANTS

OFFICE AND WAREHOUSES IN NEW YORK, CHICAGO, SAN FRANCISCO, ATLANTA. SALES REPRESENTATIVES IN PRINCIPAL CITIES.

BERRY'S
RUBBERIZED
ASPHALT

THIS FOLDER CAN SAVE YOU THOUSANDS OF DOLLARS IN ROAD CONSTRUCTION AND MAINTENANCE

YOU WILL SEE HOW rubber and asphalt have been successfully blended to form an all weather sealcoat — how the adhesiveness and resiliency of rubber have been retained in the exclusive Berry blending process — why Berry's rubberized asphalt is less susceptible to temperature, holds more aggregate, saves on bitumen and requires far less maintenance.

Write for your copy today.

BERRY ASPHALT COMPANY OF ARKANSAS
P. O. Box 800 Magnolia, Arkansas
MEMBER OF THE ASPHALT INSTITUTE

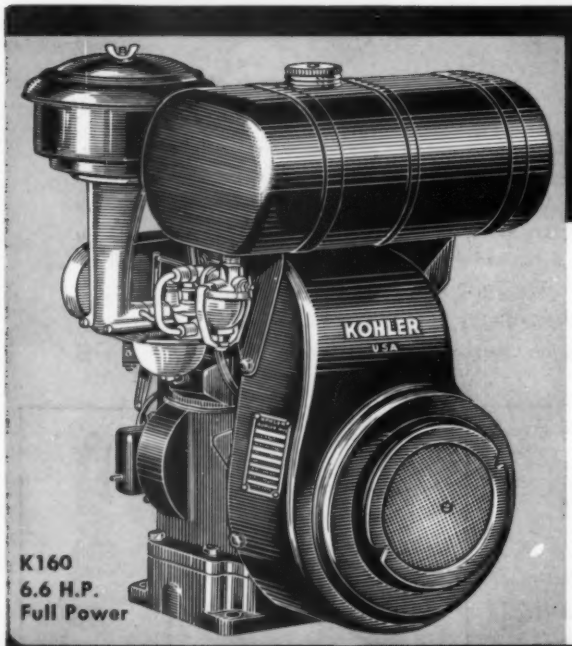
Purchasing News

Sewer Pipe Guaranteed for 75 Years

The Clay Sewer Pipe Association, Columbus, Ohio, has extended the guarantee on vitrified clay pipe from 50 to 75 years, according to a recent announcement. All clay pipe manufactured by CSPA members is guaranteed against "impairment of service, injury, or failure which may be caused either by chemical decomposition or chemical disintegration." This guarantee applies regardless of the acids or alkalis in sewage and drainage wastes.

CSPA member manufacturers offering the 75-year guarantee are Clay City Pipe Co., Uhrichsville, Ohio; Dennison Sewer Pipe Corp., Cleveland, Ohio; Evans Pipe Co., Uhrichsville; Graff-Kittanning Clay Products Co., Worthington, Pa.; Grand Ledge Clay Product Co., Grand Ledge, Mich.; Junction City Clay Co., Cleveland; Kaul Clay Mfg. Co., Toronto, Ohio; Kaul Clay Products Co., Clermont, Pa.; Larson Clay Pipe Co., Detroit, Mich.; Logan Clay Products Co., Logan, Ohio; Peerless Clay Corp., Toronto; Robinson Clay Product Co., Akron, Ohio; Ross Clay Prod-

Maurice Maskrey, president of the Clay Sewer Pipe Association, inspects a length of vitrified clay pipe laid in 1877 at Manchester, N. H. After 79 years, it was still in excellent condition.



K160
6.6 H.P.
Full Power

KOHLER ENGINES
4-CYCLE • AIR-COOLED

A Quality Engine for Quality Equipment

Short Stroke
- Less Friction and Wear
- More Power
- Longer Life

Easy Starting

K90	2.5 to 3.6 H.P.
K160	3.6 to 6.6 H.P.
K330	7 to 11.8 H.P.
K660	12 to 26 H.P.

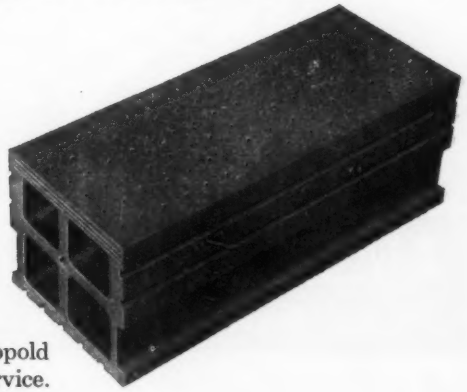
Kohler Co., Kohler, Wisconsin
Established 1873

KOHLER OF KOHLER
PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

A GOOD COMBINATION

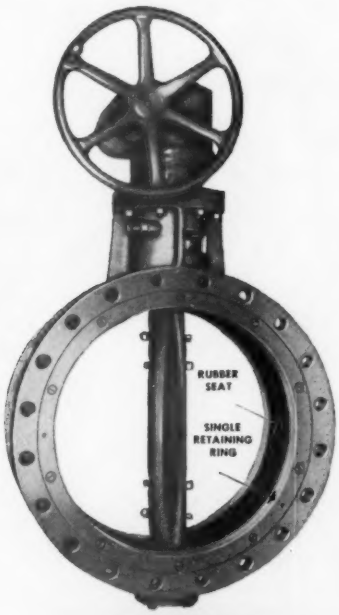
for better performance— lower operating costs...

LEOPOLD FILTER BOTTOMS



Designed to successfully meet all underdrain requirements

Made of de-aired fire clay—vitrified and salt glazed, the Leopold Filter Bottom is unequalled for dependable, economical service. The individual blocks resist corrosion, are not subject to tuberculation, and will last indefinitely. Too, they require only small sized gravel, do not need special supporting concrete members, and the Leopold design insures uniform wash distribution.



LEOPOLD
Rubber Seated
BUTTERFLY VALVES

Assure positive drop-tight shut-off easily, efficiently, economically.

In this design, the seat is of resilient Neoprene rubber or pure gum rubber, vulcanized around a steel ring insert, and held in place by a keeper ring. The steel ring, which is "continuous" to eliminate abnormal wearing, increases the firmness of the seat and assures longer service life.

Whether operated manually or by automatic controls, Leopold Butterfly Valves always provide a positive shut-off that's bubble-tight. Made in sizes 6" to 72".

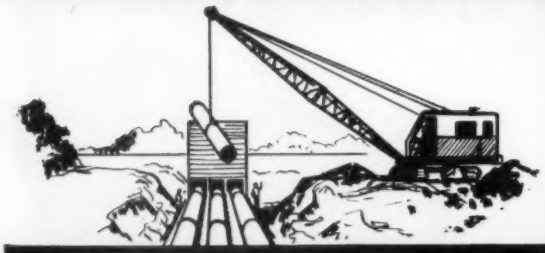
Leopold

Write today for descriptive literature!

F. B. LEOPOLD CO., INC.
2413 W. CARSON STREET, PITTSBURGH 4, PA.

COMPLETE WATER PURIFICATION AND FILTER PLANT EQUIPMENT • BUTTERFLY VALVES
FILTER OPERATING TABLES • MIXING EQUIPMENT • DRY CHEMICAL FEEDERS

How Oklahoma City Solved a Sewer Relocation Problem –



AMERICAN Double-X
Mechanical Joint Pipe

When the channel of the North Canadian River at Oklahoma City had to be relocated, Oklahoma City faced a sewage disposal problem. The sixty-inch gravity sewer across the river bottom obstructed the path of the new channel.

Engineering studies indicated that the installation of two inverted siphons with gravity flow was the most practical way to relocate the sewer.

Alert municipal officials in Oklahoma City planned for the future when these siphons were installed. With an anticipated future flow almost four times as great as the present maximum flow, three 30″ American Double-X Mechanical Joint pipe lines were laid for one siphon, and three 24″ Double-X lines for the second.

In addition to planning for adequate capacity, these officials planned for longer and more economical service. Corrosion-resistant, longer lasting cast iron pipe was their choice . . . *quality* pipe, centrifugally cast by the American Cast Iron Pipe Company.

If your project is important now, and will be even more important in the future, be sure you specify American Cast Iron Pipe.

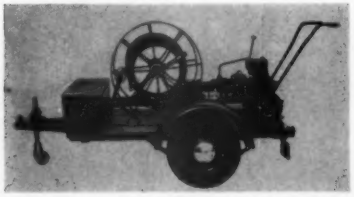
SALES OFFICES

New York City / Los Angeles
Chicago / San Francisco
Kansas City / Orlando
Minneapolis / Pittsburgh
Dallas / Cleveland
Houston / Seattle / Denver

AMERICAN CAST IRON PIPE CO.
BIRMINGHAM 2, ALABAMA

uct Co., Uhrichsville; Stillwater Clay Products Co., Cleveland; Superior Clay Corp., Uhrichsville; and Union Clay Mfg. Corp., Binghamton, N. Y.

Fast Way to Clean Sewers



Cleaning storm and sanitary sewers is a fast, easy operation when you're using this new gasoline-powered Electric Eel. The Model 200 features its own power source, and is quickly moved to any location. One man operating the machine can quickly open the worst stoppages.

The power unit of the Electric Eel is mounted on a pneumatic-tired cart, and features a Clinton 2-hp, 4-cycle, back-geared engine with a foot-operated clutch. Power is controlled through a Warner gear transmission, providing three speeds forward; 150, 250 and 500 rpm; and a reverse speed of 150 rpm.

Further details on the new Electric Eel may be obtained from THE OHIO TOOL AND ENGINEERING CO., 128 N. SPRING ST., SPRINGFIELD, OHIO. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 948.

Combination Backhoe and Backfill Blade

Attach this combination backhoe and backfill blade to any International 300 tractor. The handy attachments are useful on a variety of municipal trenching jobs, for bell hole and foundation excavation, and for backfilling, leveling and grading operations. They are available from the WAIN-ROY CORP., HUBBARDSTON, MASS.

The self-contained backhoe is easily attached or removed from the tractor in less than 30 minutes. It digs 11 feet deep, and is easily maneuvered in tight quarters. Double boom lift cylinders furnish greater down pressure, lifting capacity and break-out force.

The sturdy, 6-foot backfill blade is mounted on the forward end of the subframe. This blade raises and lowers hydraulically a distance of 18 inches above the grade to eight inches below grade. It may be angled either right or left for backfill as the tractor travels parallel to the trench.

The new combination backhoe and backfill blade attachment is fully described in literature from the manufacturer. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 933.

LOCATES VALVES QUICKLY

even under heavy snow, ice, black top

the NEW AQUA VALVE BOX LOCATOR

The miraculous new Aqua locator takes you directly to the valve box . . . *even when the ground is covered with snow, ice or black top.* Saves hours of back-breaking digging in hard, frozen ground.

And you get pinpoint accuracy, with no needle nervousness. Aqua "electric braking" action reduces needle spinning to absolute minimum.

One in every truck...

Many gas and water departments have the Aqua locator on every service car and truck. Saves time and expense of emergency runs.

Our Canadian Distributors:
Canadian Brass Co., Ltd.
Galt, Ontario, Can.
Francis Hankin Co., Ltd.
2028 Union Ave.
Montreal, Can.
Prices slightly higher in Canada

$29.50 f.o.b. CINCINNATI
Your Name In Gold Free

- Top-view reading. No stooping.
- Factory adjusted to your geographical location.
- Instrument includes compass.
- New high impact Styron plastic case virtually indestructible
- Compact, convenient, non-variable.
- Guaranteed to function regardless of ground cover.

FREE 15 DAY TRIAL
AQUA SURVEY & INSTRUMENT CO.
2510 Leslie Avenue, Cincinnati 12, Ohio

FREE TRIAL MAIL COUPON

Gentlemen: Please send me
☐ New Aqua Valve Box Locator for FREE 15 day professional trial, without obligation.
☐ Detailed literature on new Aqua Valve Box Locator.

NAME_____
COMPANY_____
STREET_____
CITY_____ ZONE____ STATE_____

In-place crushing of subbase material nets big savings on this new freeway near Azusa, California. How? With the Athey Force-Feed Loader and Portable Breaker Team! Leased by the Malloy Construction Co., Inglewood, California, to the county, the unit picks up windrowed subbase material containing about 40% fines, with scattered over-size rocks up to 12″ in diameter and reduces the material to 3″ minus. Material is placed in windrows of ideal size for blading or shooting with oil or asphalt if desired . . . and there's the subbase material at big savings!

Result: owner, Mr. Malloy, is planning to specialize in road building with the efficient Athey Force-Feed Loader and Portable Breaker!

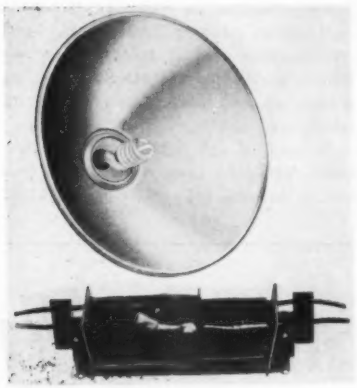
The same money-saving method can be used for reclaiming in-place black-top, concrete or gravel surfaces on your own community's road improvement or rebuilding projects. Investigate the potential of the Athey Force-Feed Loader and Portable Breaker! See your Athey-Caterpillar Dealer!

Athey

Your Athey-Caterpillar Dealer will gladly tell you more facts about the Force-Feed Loader and Portable Breaker. See him today.

ATHEY PRODUCTS CORPORATION
5631 West 65th Street
Chicago 38, Illinois

New, Non-Burnout Traffic Signal Lamp



A new product makes traffic lamp replacements unnecessary, according to the manufacturer. Its name is Neo-Converter, and it comes in three parts: the gas vapor tube, the reflector, and the neo-converter with mounting brackets. These parts convert the existing traffic signal to gas vapor tubes which will not burn out.

The Neo-Converter has the same brilliance as well as the same color as incandescent signals, and the complete converter can be installed in 15 minutes.

For complete information, write NEO-FLASHER MFG. CO., 3210 VALHALLA DR., BURBANK, CALIF., or you may use the Post Card on the insert following Page 34. Circle No. 943.

Appoints New Municipal Representatives

Dudley W. Day, vice-president of Penn Instruments Division, Burgess-Manning Co., 4110 Haverford Ave., Philadelphia, Pa., announces the appointment of two firms to represent the company in the municipal field. These include the E. R. Parkhurst Co., 1511 Fishburn St., Los Angeles, Calif., and A. J. Kroog Co., 208 Thompson Bldg., Atlanta, Ga.

The E. R. Parkhurst Co. will handle metering and control instruments for water, sewage and industrial waste in Los Angeles, the southern part of California, and all of Arizona. A. J. Kroog Co. will represent Penn Instruments in Alabama, and North and South Carolina.

The Penn Instruments Division has also appointed a new representative in Louisiana and the lower Mississippi area. Scheduled to handle Penn Instrument products in this territory is the Williams Equipment Co., of Metairie, La.

New Parts Warehouse for Wooldridge Scrapers

The Wooldridge Manufacturing Division of Continental Copper & Steel Industries, Inc., Sunnyvale, Calif., has opened a new factory parts warehouse at Perth Amboy, N. J., according to a recent announcement. This additional distribution center will provide more rapid service and parts delivery for the company's complete scraper line, including Wooldridge self-propelled and tractor-drawn units.

Anthony Zulkowski will head the Perth Amboy facilities, and H. R. Patterson is CCS Wooldridge district sales manager for the North Atlantic States territory.

IMMEDIATE SHIPMENT

McWANE
2" & 2¼" PIPE
20 feet LONG
MODERN AS A NEW AUTOMOBILE

Here is the "new look" in Small Diameter CAST IRON PIPE. It is 20-feet long. And it is genuine McWane Mechanical Joint Super-DeLavaud, cast centrifugally, with all the advantages of MODERN pipe-making methods.

Made in McWane's new 2-million dollar Small Pipe foundry, this 2-inch and 2¼-inch, 20-foot pipe has all of the well known qualities of the Super-DeLavaud casting system: smooth, straight barrel; even wall thickness, sound metal section, easy to cut and tap.

The MODERN 20-foot lengths make it easier and faster to lay, saves you money in construction costs. Available un-coated, tar coated or cement lined, also bell-and-spigot. IMMEDIATE SHIPMENT. Write or telephone nearest McWane sales office.

McWANE CAST IRON PIPE COMPANY
GENERAL OFFICES & FOUNDRIES, BIRMINGHAM, ALA.
Sales Offices: Dallas Chicago Kansas City New York Birmingham

Speeds All Heavy-Duty Line Marking Jobs

The brush of the Jawco Heavyweight features an adjustable spring tension for painting light or heavy lines.

Cities interested in a heavy-duty line marking machine are offered the Jawco Heavyweight, a new traffic liner from JAWCO PRODUCTS CORP., 209-215 BUTLER ST., YORK, PA. Designed for high-speed brush application of standard traffic paint and pre-mixed beaded traffic paint, the unit will mark 4-, 6- and 8-inch centerlines at a fast walking speed. It features a removable paint tank designed to hold 10 gallons of paint.

The new Jawco Heavyweight is hand-propelled with gravity feed and brush application. Applicator brushes are easily interchanged. A special brush equalizer keeps an even pressure on the brush at all times. Both the paint flow and the brush raising controls are conveniently located on the handle.

A complete description of the new traffic line marker is available from the manufacturer. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 928.

Appoints New Distributors

Koehring Co., Milwaukee, Wis., announces the appointment of The Edward C. Flaherty Co. as its new distributor in Lower New York State. The firm replaces the R. E. Brooks Co., and will maintain complete sales, rental and service facilities at 43-87 Vernon Blvd., in Long Island City.

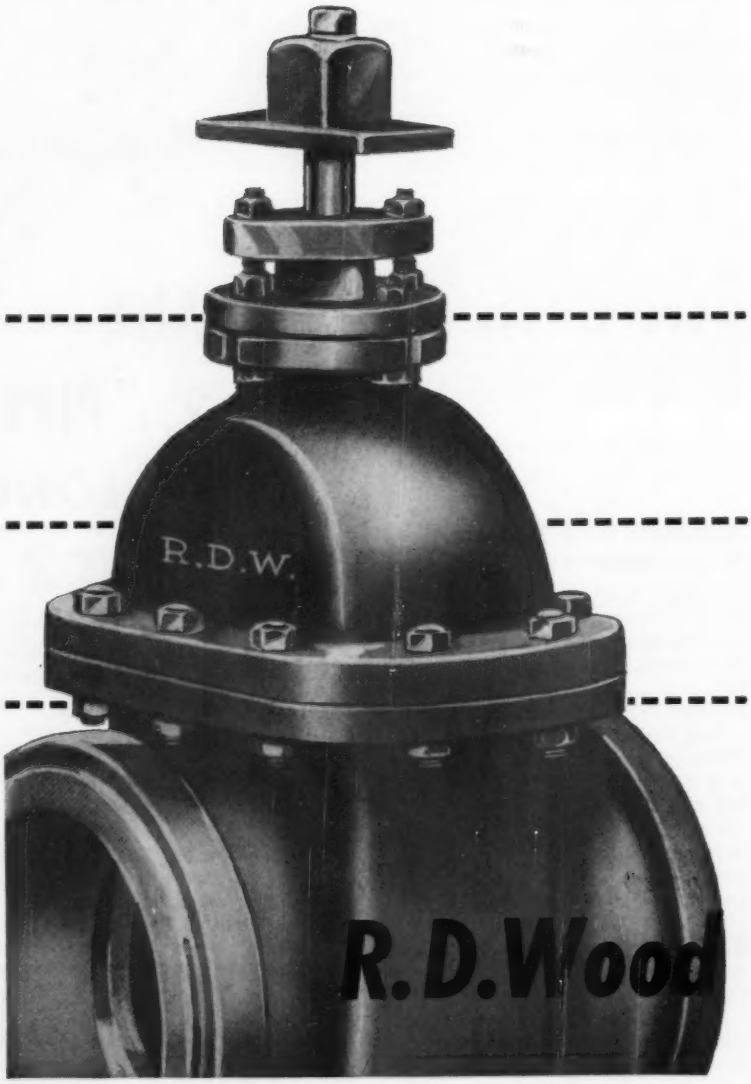
Another new distributor, George Malvese & Co., of New Hyde Park, L. I., N. Y., has been appointed by the Parsons Co. The firm will distribute Trenchliners in the Lower New York State area. Located in Newton, Ia., Parsons is a subsidiary of the Koehring Co.

Protects City Equipment, Sample Free

This new protective fabric for covering expensive machinery and other municipal equipment "handles like silk, yet is as strong as steel mesh," reports the manufacturer. The new nylon and plastic combination, Herculite, is said to be 10 times stronger than canvas, won't tear or burn, and is completely waterproof. Further, it is unaffected by acids, grease, oil, and the corrosive effects of salt water.

Because of the light weight of Herculite, only one man is needed to pull covers on and off. The nylon-plastic

Nobody wants to dig

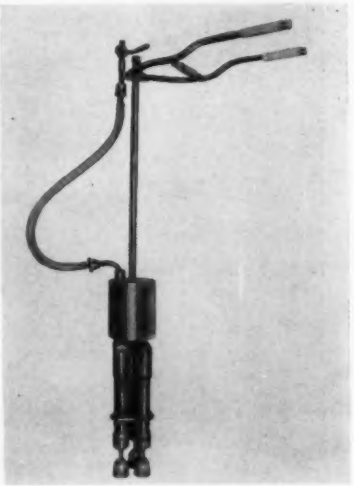


combination offers dependable protection regardless of the condition of the weather.

A complete description of Herculite, plus free samples of the protective covering, may be obtained from HERCULITE PROTECTIVE FABRICS, INC., 140 LITTLE ST., BELLEVILLE 9, N. J. Write directly to the manufacturer, or you may use the Post Card located for your convenience on the insert following Page 34. Circle No. 934.

New Tamper Works in Narrow Ditches

Tamping ditches as narrow as 10 inches is easy when you use the new Blue Brute WTN-18 Triplex ditch tamper. The narrow tamper is made of heat-treated steel, and is rigidly mounted on a triplex frame. It features adjustable handlebars on an extension pipe, enabling operators to tamp ditches up to 48 inches deep while working at ground level.

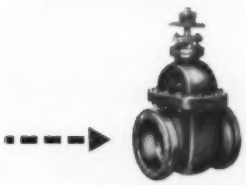


Blue Brute WTN-18 Triplex ditch tamper.

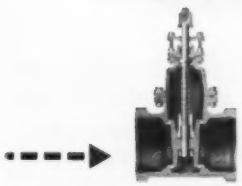
The new Blue Brute tamper is a product of the WORTHINGTON CORP., HARRISON, N. J. For full details, write the company directly, or you may use the Post Card that is located for your convenience on the insert following Page 34. Circle No. 927.

up gate valves

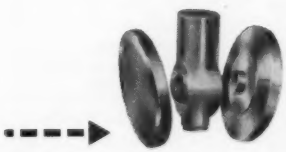
Reliability is the important consideration in gate valves. They have got to work and *keep on working* even after years of idleness in the lines. Digging them up for repairs is too costly—as well as a possible fire or health hazard while they are out of operation.



Nobody Need Dig Up This Gate Valve
The R. D. Wood Gate Valve is designed for severe underground service. It can be counted on to do what is expected of it for scores of years.



Simple in Design
The Wood Gate Valve is reliable, because there's nothing to go wrong. It is rugged, fully bronze mounted, suitable for working pressures up to 175 pounds.



Only Three Moving Parts
Just a spreader and two discs—no small wedges or delicate parts.

Revolving Discs
One of the secrets of Wood gate valve reliability is that the discs are hung loosely. They are free to revolve their complete circumference while being raised or lowered. There's no dragging of the faces to cause wear at one point.

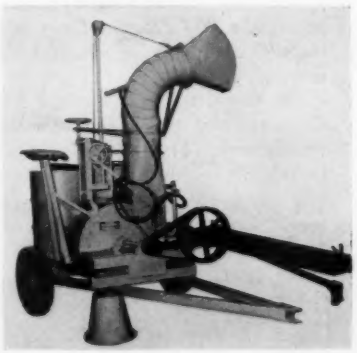
Uninterrupted Flow
The fully opened valve provides unobstructed passage. Gates are lifted entirely clear of the valve openings.

Available with mechanical joint pipe connections

Company Public Ledger Building, Independence Square Philadelphia 5, Pa.

Manufacturers of Mathews Hydrants and "Sand-Spun" Pipe (centrifugally cast in sand molds)

Fights Flies and Mosquitoes

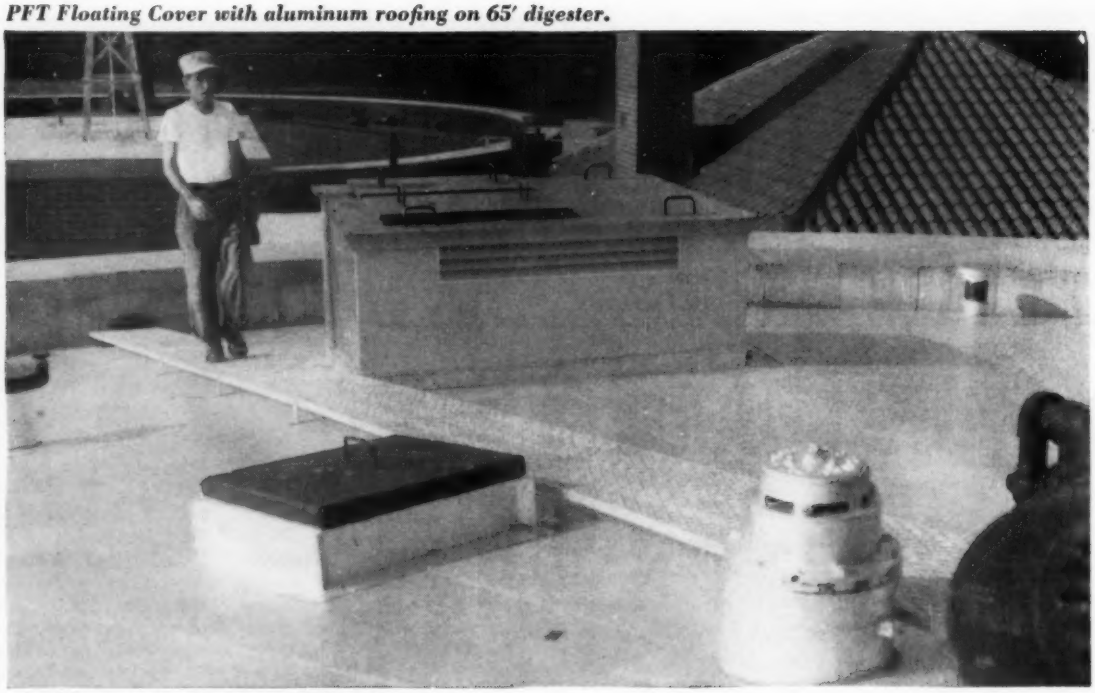


A new trailer-type insecticide sprayer has currently been developed by the CIZEK MANUFACTURING AND DISTRIBUTING CO., CLUTIER, IA. The machine is useful to municipalities for killing insect pests on trees and shrubbery. It may also be used for the economical control of flies and mosquitoes.

In addition to the insecticide sprayer, Cizek is now in the process of designing a new leaf loader attachment.

Additional details on the new City and

PFT Floating Cover with aluminum roofing on 65′ digester.



At Champaign-Urbana, Illinois . . .

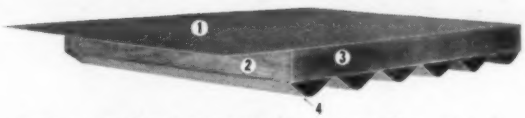
A sewage plant invests in long-range economy

PFT metal roofing on new Floating Cover provides longer life, better insulation

With future economies in mind, the Champaign-Urbana Sanitary District specified a *PFT Floating Cover* with *metal-clad roofing* for their new 65′ diameter digester.

The metal roofing provides four distinct advantages over conventional wood types: (1) longer life—equal to the life of the Floating Cover, (2) more efficient insulation, (3) fewer maintenance problems, (4) easier assembly and installation.

Shown at actual installations, PFT metal sections are easily unpacked and assembled. Cardboard boxes in foreground contain panels as they are shipped.



Section of roofing showing (1) aluminum top sheet, (2) inch-thick fiber-glass insulation, (3) aluminum reinforcing channel, (4) corrugated supporting ribs.

PFT metal roofing consists of prefabricated sections with embossed aluminum top sheets, each piece marked for easy assembly at the plant site. The sections are designed for close fitting in the field with a 3″ lap of top metal covering at all joints (see illustration). Cutout sections are provided to fit around sampling walls, hatch framing, manholes, etc.

With fiber-glass insulation, PFT metal roofing resists heat loss and keeps digester heating costs at a minimum.

Ventilators are provided for the space between ceiling plate and roof deck. Also included is a 19″ wide walkway of galvanized steel, deformed for sure footing.

The PFT Floating Cover at Champaign-Urbana includes a complete *Pearth Gas Recirculation System*—an economical process that controls the formation of scum, making more effective use of the entire digestion tank capacity.

Design of plant by / *Wilson & Anderson, Consulting Engineers Champaign, Illinois*

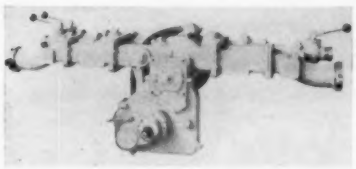
waste treatment equipment
exclusively since 1893

P.F.T.

PACIFIC FLUSH TANK CO.
4241 Ravenswood Avenue
Chicago 13, Illinois

Orchard Sprayer may be obtained directly from the manufacturer, or you may use the Post Card on the insert following Page 34. Circle No. 931.

Fire Pump Features Simplicity



The Waterous line of mobile fire pumps in five steps from 500 to 1,500 gpm has been equipped with electrical controls which greatly simplify pump operation. This simplification extends to the pump shifting, the push-button priming and transfer valve and discharge gates.

The new control relieves firemen of the responsibility for determining the desired result by providing mechanical operation.

Electro-Matic pumps are made by the WATEROUS CO., 48 FILLMORE AVE., ST. PAUL 1, MINN. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 945.

New Submersible Sump and Waste Pump

Because the water intake of the new Pleuger sump and waste pump is located at the bottom of the unit, the new submersible can pump down to a water level of four inches. Like other Pleuger submersibles, it is powered by a water-filled and water-lubricated motor. This motor is located above the pump, providing automatic protection against dirt and sand infiltration. Water is drawn directly into the first stage of the pump, by-passing the water lubricated motor, and is delivered through the 2½-inch hose connection on the discharge outlet.

The new portable submersible pump is eight inches in diameter and weighs from 130 to 175 pounds, depending on the model. It is offered with 5, 10 and 15 hp, with capacities up to 300 gpm, and heads to 140 feet.

For further information, write PLEUGER SUBMERSIBLE PUMPS, INC., LANCASTER, PA., or you may use the Post Card on the insert following Page 34. Circle No. 944.

Will Help Solve Air Pollution Problems

A new consulting firm, Resources Research, Inc., recently has been formed to help provide corrective service for atmospheric-pollution problems and related subjects. The firm is headed by Dr. Louis C. McCabe, formerly scientist director in the U. S. Public Health Service and staff advisor on air pollution. He was also the first director of the Los Angeles Air Pollution Control District and, at one time, headed air and stream pollution research in the U. S. Bureau of Mines.

The consulting firm has its main office at 4435 Wisconsin Ave. NW., Washington 16, D. C. It also has offices at 55 W. 42nd St., New York 36, N. Y., and in Casper, Wyo.

Unequalled
for Quick,
PERMANENT
PIPELINE
REPAIRS
Designed especially as a quick, permanent repair on broken cast-iron or asbestos-cement pipe and as a coupling to connect lengths of cast-iron, steel, Transite Ring-Tite or Century Fluid-Tite pipe.
• LOW COST
• SAVES TIME
Pats. Applied For
Featuring...
• DUCTILE PIVOTING LUGS
• FREE FLOATING BOLTS
• HIGHER BAND TENSIONS
• INCREASED HOLDING POWER
• FAST, PERMANENT REPAIRS
METAL ARMORED
MOLDED GASKET
New Series 2F FULL CIRCLE CLAMP COUPLING
NEW 20-PAGE CATALOG LISTS ALL SIZES AND PRICES. SIMPLIFIES ORDERING. ASK FOR YOUR FREE COPY TODAY.
SMITH BLAIR INC.
SMITH-BLAIR, Inc.
535 Railroad Ave., SO. SAN FRANCISCO, Calif.
• BRANCHES
5635 E. Imperial Highway, SOUTH GATE, Calif.
W. Newton Road, GREENSBURG, Pennsylvania
SB-226

ALL NEW DESIGN!

Simple...Foolproof...Low Cost

1500 WATT HOMELITE GENERATOR

Model 35A115
Homelite Generator
1500 Watts, 115 Volt
60 Cycle AC

Weighs only 90 lbs.!

As easy to move as an electric hand saw!

1. New Money-Saving features . . . No DC brushes; just two easy-to-get-at collector ring brushes . . . No commutator or DC windings . . . No intermediate couplings; armature keys directly to shaft. Fewer parts to wear out — longer trouble-free generator service.

2. Constant Voltage . . . less than 4% change from no load to full 1500 watt capacity . . . assures long service life for your electric tools . . . guarantees top performance at all times.

3. Overload Capacity . . . 1500 watt continuous duty with generous overload capacity prevents tool stalling under heavy loads . . . insures uninterrupted service even when starting loads exceed operating loads.

4. Compact and Lightweight . . . one man can easily carry this 90lb generator wherever you need electricity to power time-saving electric tools. No need for long, hazardous power-consuming cables.

Whatever tools you want to operate — electric saws, drills, floodlights, grinders, belt sanders, hammers, — the new Homelite 35A115 generator can save you money. For a free demonstration or additional information, call your nearest Homelite representative, or write:

SAVE EVEN MORE! New Homelite idle control unit, available as optional accessory, runs engine at idle speed when no current is drawn . . . automatically brings engine to full speed when load is applied. Ask your Homelite representative to show you how this easily-installed accessory reduces engine wear . . . increases service life . . . cuts fuel consumption.

HOMELITE *A DIVISION OF TEXTRON AMERICAN, INC.*
105 RIVERDALE AVE., PORT CHESTER, N. Y.

Manufacturers of Carryable PUMPS • GENERATORS • BLOWERS • CHAIN SAWS

New Soil Shredder for City Parks

New Model FB-24 soil shredder working with a tractor loader.

Municipal park departments can use the new Model FB-24 soil shredder for tractor bucket feeding of all types of soil, manure, peat, peat humus, and sphagnum moss. The heavy-duty unit, complete with a conveyor belt feeder, will accommodate the average tractor bucket of ⅓- to ½-cubic-yard capacity. Working with a tractor loader, it cuts soil processing time and improves the shredding operation.

The new shredder is mounted on two pneumatic-tired wheels, and is equipped with tongue and pin hitch for easy transportation. It is available with either a gas or electric power unit. The shredder is six feet high, six feet wide, and six feet-two inches long.

Additional data on the Model FB-24 may be obtained from the LINDIG MFG. CO., INC., 1875 W. COUNTY RD. C, ST. PAUL 13, MINN. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 930.

Witt Cornice Co. Assigns Extra Territory

Barker & Fleming, Inc., 622 W. Randolph St., Chicago, Ill., sales representatives for The Witt Cornice Co. in Michigan, Minnesota, North and South Dakota, has been assigned additional territory, according to a recent announcement. The company will also operate in Illinois, Wisconsin, northern Indiana, parts of Iowa, and St. Louis, Missouri.

Originators of the corrugated can, Witt Cornice is located in Cincinnati, Ohio. In addition to garbage cans, the company's full line includes push-top lids, oily waste cans, roller cans, underground garbage receivers, hooded cans, mopping pails, and large refuse cans.

modern GIVES YOU SO MUCH more...

IN SWIMMING POOL SUPPLIES

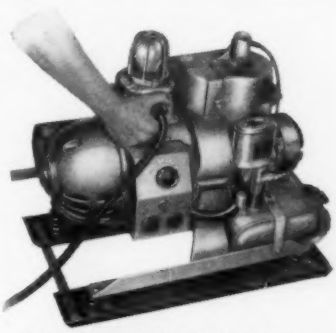
Modern manufactures over 100 top-quality products — including filters, fittings, vacuum cleaners, pool paint, algae preventives, diving boards—for every swimming pool need. Modern offers more know-how, more value, greater dependability—thanks to a large, experienced staff. Huge stocks and regional warehouses assure fast shipment. Low prices save you money.

modern SWIMMING POOL CO., INC.
One Holland Avenue, White Plains, N. Y.
Manufacturers of Swimming Pool Supplies Since 1935

FREE! Send today for big Catalog No. No. 12-S

CHOOSE from a full line of HOMELITE Carryable Construction Equipment

SELF-PRIMING CENTRIFUGAL AND DIAPHRAGM PUMPS
Sizes: 1½" to 3" — capacities to 15,000 g.p.h. for dewatering and water supply.



ELECTRIC GENERATOR SETS FOR TOOLS AND LIGHTS
Complete range of sizes and voltages up to 5,000 watts.

LIGHTWEIGHT POWERFUL ONE-MAN CHAIN SAWS
Complete line of saws with clearing and brushcutter attachments for every woodcutting job.

HOMELITE
A DIVISION OF TEXTRON AMERICAN, INC.
PORT CHESTER, N. Y.

New Joint Wrap for Water and Sewer Pipe

Now you can hand wrap field joints and fittings on water and sewage pipelines quickly and easily with "Duratape," a new pipeline joint wrap introduced by the L. O. F. Glass Fibers Co. When properly applied, "Duratape" forms a long-lasting barrier against corrosion. It consists of a parallel-reinforced glass fiber mat, reported to be heavily coated on both sides with plasticized coal tar.

To apply "Duratape" correctly, you must first clean the section of the pipe that is to be wrapped. Then apply a coal tar base primer. When the primer is dry, spiral wrap the "Duratape" onto the pipe or fittings, using a 30% to 50% lap while flashing the inner side of the tape with a wide mouth butane torch.

Field joints can be wrapped quickly and permanently when you use new "Duratape" pipeline joint wrap.

After the spiral wrapping is complete, the entire exterior of the pipe section should be flashed to form a smooth, perfectly sealed coating with a nominal thickness of 3/32-inch.

In addition to being fast and economical to apply, "Duratape" is easy to handle and store. The new joint wrap is wound on a strong cardboard core and has a wax paper liner. The rolls are shipped in corrugated cartons.

Descriptive and technical data on "Duratape" may be obtained from L.O.F. Glass Fibers Co., 1810 Madison Ave., Toledo 1, Ohio. Write directly, or you may use the Post Card located for your convenience on the insert following Page 34. Circle No. 960.

Aerial Mapping Firm Opens Australian Subsidiary

The formation of a new Australian subsidiary, World Wide Surveys Pty., Limited, is announced by Fairchild Aerial Surveys, Inc., 224 E. 11th St., Los Angeles 15, Calif. The new firm is located in Mascot, a suburb of Sydney, Aust. Associated with Fairchild in the new venture are Aero Service Corp., of Philadelphia, Pa., and Sepal Pty., Limited, of Australia.

World Wide Surveys will be equipped with the necessary aircraft and laboratory equipment to meet the growing need for aerial surveying and airborne geophysical surveying in the virtually unexplored Australian continent. Actual flying operations are expected to begin in a matter of weeks.

How a fast, compact TENNANT Sweeper...

City of Winston-Salem (N.C.) sweeps downtown walks with their Tennant "75" Sweeper.

sets a new standard in clean, LOW-COST sweeping

In busy downtown areas, where *clean* sweeping counts most, but is costly—a compact Tennant Power Sweeper pays for itself fast. It not only *does the work of a crew of men;* it sets a new standard for clean work. You'll see the difference.

Sweeping easily around parked cars, its powerful brush-and-vacuum system rapidly cleans a 48" path. Picks up dust, dirt, paper, sand—the usual loose light litter found in gutters, on walks and in alleys. Does a remarkable job.

It's rugged . . . compact . . . easy to use; and superbly engineered for long, dependable service.

SPECIAL FEATURES

- Sweeps 4 to 8 times faster than by hand.
- Sweeps EXTRA CLEAN; has vacuum dust control.
- Dumps load mechanically.
- Cleans 48" path; can sweep flush with walls, curbs.
- Reverses instantly.
- Steers easily in traffic; has 38" wheelbase.
- Can also be used in PARKING LOTS, RAMPS, GARAGES, etc.

Write today for details.

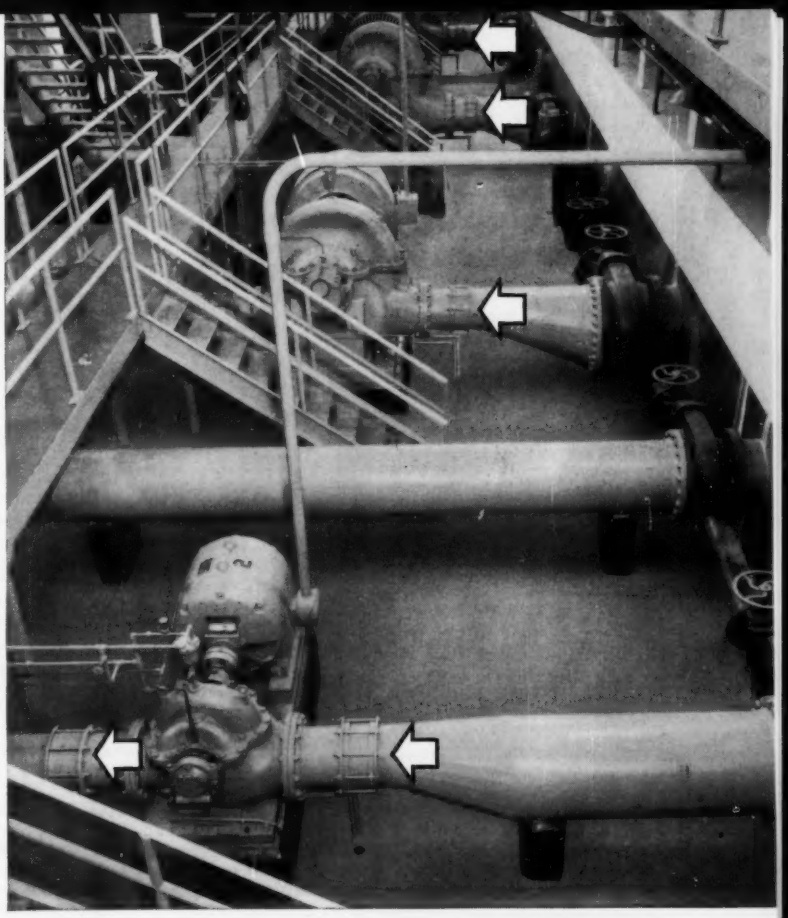
G. H. TENNANT COMPANY
2520 N. 2nd St., Minneapolis 11, Minn.

TENNANT POWER SWEEPERS

SPECIALIZED MAINTENANCE EQUIPMENT

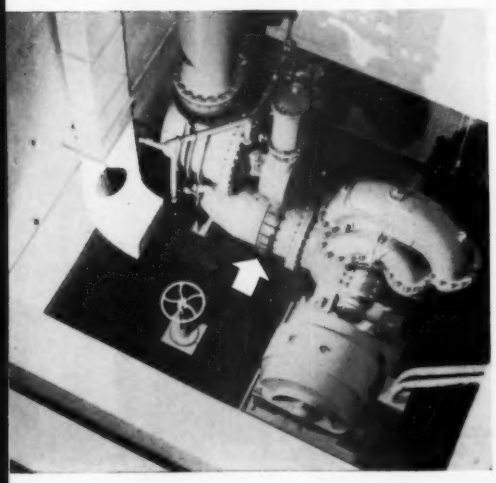
SPEAKING OF PUMP PIPING

The Elm Fork Water Plant Pumping Station of Dallas, Texas, doubles the city's purified water supply with its capacity of 105 mgd at 150 psi. Dresser Style 38 Couplings were installed on suction and discharge lines connecting high lift station pumps (right) and on discharge side of low lift pump (below)... to take care of movement or misalignment, and to make installation and disassembly easy. Consulting engineering was by Myers and Noyes and Associates; the contractor was E. E. Farrow Company.



DOUBLE DUTY FOR DALLAS

DRESSER COUPLINGS PROVE IDEAL FOR PUMP CONNECTIONS



Having spent eight million dollars for this superb new water facility, the city of Dallas protects its investment with Dresser-Coupled pump connections.

Thus, each line is provided with *built-in* flexibility. The resilient wedge-shaped gaskets in every Dresser Coupling absorb and cushion vibration and pipe-transmitted stresses.

Moreover, the unique Dresser design assures fast, foolproof installation. There's no need for exact pipe fitting or aligning operations. Joints are sealed bottle-tight for life . . . with a wrench, the only tool required. Any workman can make 100% tight joints and maintenance is simplified by easy teardown.

Give all your water piping jobs the same advantages. Specify Dresser Couplings—the proved, low-cost, trouble-free way to make pump connections . . . and for every other type of piping installation.

See your piping supplier today on how you can save on water and sewerage projects.

DRESSER

ONE OF THE DRESSER INDUSTRIES

Dresser Manufacturing Division, 69 Fisher Ave., Bradford, Pa. Warehouses: 1121 Rothwell St., Houston; 101 S. Airport Blvd., S. San Francisco. Sales offices also in: New York, Philadelphia, Chicago, Denver. In Canada: Toronto and Calgary.

LOOK at all you can do with a BLAW-KNOX ROAD-WIDENER

- Spread Base Course for Road Widening
- Spread Shoulder Material
- Place and finish concrete without forms
- Spread and finish Asphalt
- Spread any kind of Aggregate

BLAW-KNOX
Dual Compression Trench Roller

Flexible and economical trench roller can roll a minimum width of 20" when rolls are in line. Can also be hydraulically adjusted to roll a maximum width of 39" to increase production by reducing rolling time.

You'll like the Road Widener's ability to handle many different jobs and materials. It's versatility means that you will need a minimum of labor and equipment on any road widening or shoulder job to lower construction costs. Steady high capacity of up to 200 tons per hour keeps jobs on schedule. Tandem drive wheels on all models have power to spare for pushing the heaviest trucks up steep grades. A large hopper, special conveyor belt and hydraulically controlled strike-off gates handle any type of aggregate or asphaltic concrete in widths of 2 to 10 feet and handle concrete in widths of 2 to 6 feet. Hydraulic controls permit gradual widening of a strip around curves when laying aggregate or asphalt. Special vibrator attachment available for all models will permit the placing and finishing of concrete without the use of forms.

50th Anniversary BLAW-KNOX 1906-1956

BLAW-KNOX COMPANY
CONSTRUCTION EQUIPMENT DIVISION
30 CHARLESTON AVENUE MATTOON, ILLINOIS

For 11 Years First and Best

FOG APPLICATOR FOR FLY and MOSQUITO CONTROL

TIFA

TODD INSECTICIDAL FOG APPLICATOR

1. Best by test, by performance . . . on the dump, over pools, wherever insects swarm.
2. Clean, **all-permeating** fog using newest or older insecticides, solution, emulsion or suspension.
3. Wet or dry penetrating fog, droplet control from ½ to 200 microns.

★ *Carrying underwriters' listing seal.*

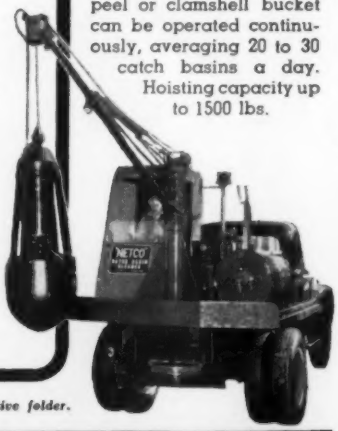
Write for illustrated folder with full details and official comments.

PRODUCTS DIVISION
TODD SHIPYARDS CORPORATION
HEADQUARTERS: Columbia and Halleck Streets, Brooklyn 31, N. Y.
PLANT: Green's Bayou, Houston 15, Texas

New NETCO Catch Basin Cleaners are Working Throughout the Land in These Cities

Chicago, Illinois
Indianapolis, Ind.
Cumberland, Md.
Boston, Mass.
Fitchburg, Mass.
Lowell, Mass.
Grand Rapids, Mich.
Trenton, N. J.
Westfield, N. J.
Binghamton, N. Y.
City of N. Y., N. Y.
Utica, N. Y.
Parma, Ohio
Philadelphia, Pa.
Pa. Turnpike Comm.
Hamilton, Toronto
Canada

Easily mounted on any short wheel base truck with 8 ft. in back of the cab, the NETCO with orange peel or clamshell bucket can be operated continuously, averaging 20 to 30 catch basins a day. Hoisting capacity up to 1500 lbs.



Send for our 6 page descriptive folder.

NETCO DIVISION
CLARK-WILCOX COMPANY
118 Western Avenue
Boston 34, Massachusetts

Counts Coins Faster

Model-DE coin counter now delivers 2,700 coins per minute.

The counting speed of the Klopp coin counter has been increased 23%, according to a recent announcement. The Klopp Model-DE now delivers 45 coins per second with a completely accurate count. It is reported to be 15 times faster than hand counting and, in addition, eliminates the possibility of human error.

This same machine also delivers the coins at high speed into wrappers for deposit. It is offered by KLOPP ENGINEERING, INC., 35551 SCHOOLCRAFT RD., LIVONIA, MICH. For further details, write the manufacturer directly, or you may use the Post Card on the insert following Page 34. Circle No. 963.

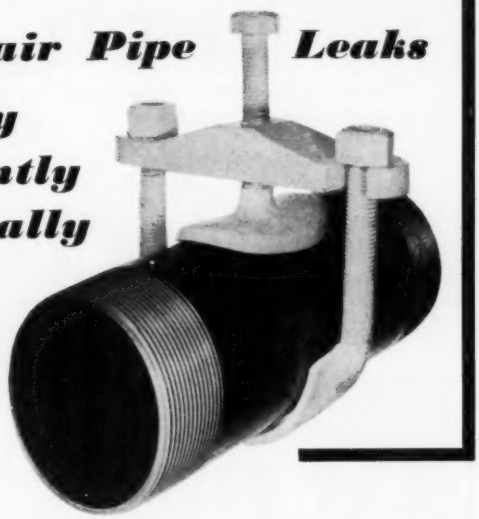
I-H Opens New Service School

A modern power service training program housed in 5,000 square feet of floor space at the International Harvester Co., Melrose Park, Ill., was inaugurated recently at a formal celebration. Harold T. Reishus, vice-president of the company's Industrial Power Division, dedicated the program before 24 service managers representing International distributors from various locations in the United States.

The new facilities at "Melrose Tech" are said to provide every type of training needed to educate company and distributor personnel. Special classrooms are available for a wide variety of training courses, and a large auditorium permits the showing of motion pictures and slide films. Also available at the new school is an injection pump lab, a photo

NOW! *Repair Pipe Leaks Quickly Permanently Economically*

with the NEW ATLAS PIPE TOOL and PIPE PATCHES



Developed after years of research and testing, no other tool—no other method known today—will repair pipe leaks as quickly, as permanently, and as economically as the new patented Atlas Pipe Tool and Patches. And without shutting off lines!

The unique Atlas Pipe Tool is simplicity itself. In consists of a sturdy, but lightweight, clamp easily handled by one man. A working space of only a few inches larger than the diameter of the pipe is required even if leak occurs at the bottom of the pipe. The patches, made of steel with neoprene gaskets, are accurately shaped to fit specific pipe sizes—assuring a skintight fit when gasket is compressed. When welded, the patch becomes a permanent part of the pipe—as strong as the pipe itself.

Two Types Available

Saddle Type Tool In four sizes for pipe 6 inches in diameter and less.

Chain Type Tool In sizes for pipe 7 inches in diameter up to any size.

ATLAS PIPE TOOL AND PATCHES ARE INEXPENSIVE

Prices range from $10.00 for the smallest size tool to $45.00 for the 36" size; patches cost from $1.50 for the 1" to $4.00 for the 36". A complete price list is yours for the asking.

Ask Your Favorite Dealer for Detailed Information, or Write Atlas Industries, Inc.

HERE'S HOW THE ATLAS PIPE TOOL WORKS

Tool and patch applied by one man in approximately 30 seconds, instantly stopping leak.

When convenient patch is welded to pipe.

Where welding is hazardous, patch is cold-welded to pipe and allowed to dry for 24 to 48 hours.

Tool is removed leaving Patch on Pipe—almost as strong as pipe itself.

ATLAS INDUSTRIES, INC.

Manufacturers of Patented Atlas Pipe Tool and Pipe Patches

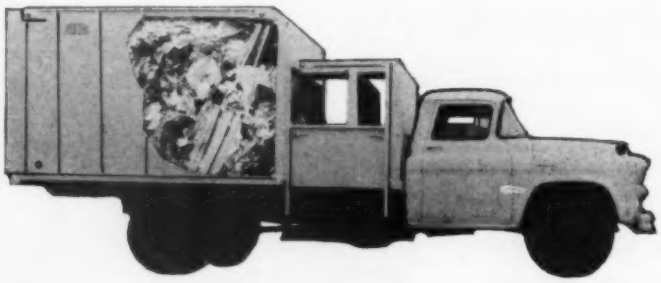
General Offices and Warehouse 5601 Armour Drive

Mailing Address—Houston, Texas P. O. Box 8152—WAlnut 6-5789

HIGH CAPACITY

Hydraulic Ram Direct Action Packer
Compacts Big Pay Loads.

HYDEPAK
SANITARY REFUSE BODY



AUTOMATIC

Push Button Control Increases Productive Labor.

LOW COST Fewer working parts and Simplicity in Design costs less to manufacture.
Installs on low priced standard wheelbase Truck without modification or reinforcement

Sold Through Distributors. For Information Write

THE HYDE CORPORATION

Post Office Box 1265 **Fort Worth, Texas**

DISPENSIT

The Finest PORTABLE INSULATED WATER CARRIER *on the Market Today!*

STAINLESS STEEL (18.8) INTERIOR . . . Not a Coating

DISPENSIT . . . the **quality plus** lightweight portable water carrier! Reduces costs, increases efficiency on any construction or maintenance job . . . because the **DISPENSIT** portable, with Cup Dispenser, is usually transported on the water boy's back . . . you save time and money by keeping workers at their job.

Absolutely sanitary (approved by health authorities everywhere). Entire lid removable, inner stainless steel interior can be scoured as easy as a sauce pan. Four gallon capacity, outer shell coated zinc bonderized steel. Recessed automatic chrome-plated spigot is removable for cleaning, no tools needed.

FIBRE GLASS INSULATION

ALUMINUM ENAMEL EXTERIOR FINISH

AUTOMATIC CHROME SPIGOT

Write for Prices
DISTRIBUTORS WANTED

EQUIPPED WITH HEAVY WEBB STRAPS FOR CARRYING ON BACK

PARCO PRODUCTS CO.

PENNSBURG, PENNA.

lab, shop area for teardown, and a tool room.

Main offices of the International Harvester Co. are located at 180 N. Michican Ave., Chicago 1, Ill.

Adjustable Manhole Shield

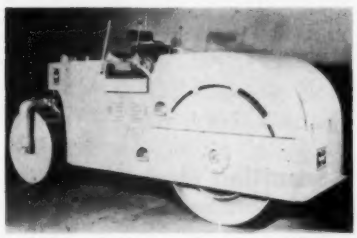
Keep surface water and dirt out of open manholes while work is being done below with a Cope adjustable manhole shield. The shield is easily adjusted to fit manhole frames up to 36 inches in diameter. It is usually caulked in place

with plaster of Paris, an effective seal that is easily removed.

The new manhole shield is 12 inches high, and is constructed of electrically-welded steel. It is finished in standard Cope red, and weighs 40 pounds.

Detailed information on the Cope manhole shield may be obtained from T. J. COPE, INC., COLLEGEVILLE, PA. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 956.

Medium and Heavy-Duty Tandem Rollers



This new line of medium and large size variable weight tandem rollers for street construction and maintenance features a torque converter and 2-speed transmission as standard equipment. There are four models in the new line—the medium-sized 5-8 and 8-10 ton rollers, and the large 8-12 and 10-14 ton tandems. All four machines offer longer engine life, forward-reverse clutches, and a decrease in fuel consumption. The dangers of shock loads, stalling and overloading have been eliminated.

Through the use of a tail shaft governor, the new rollers closely maintain the speed set by the operator automatically, regardless of the grade. Too, the combination of a torque converter and 2-speed transmission makes the correct gear ratio available to meet any work load. It does this by keeping the tail shaft speed well within the efficiency limits of the tail shaft governor, despite the speed of the roller.

A more detailed description of the new line may be obtained from the HUBER-WARCO CO., MARION, OHIO. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 954.

FASTER—DEEPER—MORE MANEUVERABLE DIGGING EQUIPMENT *at less than half the cost* OF COMPARABLE MACHINERY

The Everett® Trencher

FOR FORD OR FERGUSON TRACTORS MODEL 60

Mobile Tractor Mounted
Digs clean, smooth trenches up to 5 foot deep, as fast as 300 feet per hour.

Here's real trench sense! . . . the answer to hundreds of building requests for a tractor-driven trencher that will do a big digging job at a sensible price. It's the compact, rugged, and versatile Everett® Model 60 Trencher that operates from the power takeoff of the tractor—raised and lowered by built-in hydraulic system. It has the smooth operation of the wheel type trencher and the vertical advantage of the ladder type—digging close to buildings, curbings, pipes—ideal for pipeline inspection.

- QUALITY BUILT THROUGHOUT
- FAST DIGGING ACTION
- ANY TYPE SOIL
- MANEUVERABLE RUBBER TIRED MOBILITY
- HYDRAULICALLY CONTROLLED CONVEYOR

WRITE TODAY ABOUT ANOTHER PROVEN

EEC® *PRODUCT FOR INDUSTRY*

The Everett Trencher Model S Series EQUALS THE WORK OF 25 PICK AND SHOVEL MEN.

EARTH EQUIPMENT CORPORATION
2036 Sacramento Street, Los Angeles 21, California
☐ Please send full information on new Model 60 Everett® Trencher
☐ Please send full information on new Model S Everett® Trencher
AC-5
NAME_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE_____ STATE_____

Makes Refuse Collection Fast and Easy

Oversize refuse loads needn't be a deterrent to your city's sanitation service if you use the new Diamond T Tilt-Cab refuse collection truck.

For example, a private hauler serving the Chicago area was able to mount a huge 38-yard body on a short wheelbase chassis, so that the complete truck is only 24 feet-6 inches long. This short over-all length simplifies refuse collection in crowded, narrow alleys.

The new refuse collection truck, Model 630C-32M, is easy and inexpensive to maintain. The entire cab is counterbalanced and tilts forward manually, without power unit or disconnections. With the cab in full forward position, the entire engine area is open for needed adjustment without unnecessary delay.

New Diamond T Tilt-Cab vehicle measures only 76 inches from front of bumper to back of cab.

A detailed description of the Diamond T Tilt-Cab may be obtained from the DIAMOND T MOTOR CAR CO., 4401 W. 26TH ST., CHICAGO 23, ILL. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 929.

Standard Steel
"FLUSHER FLEETS"
FIGHT DIRT ALL OVER THE WORLD

DALLAS, TEXAS . . . This fast-growing Texas city "keeps clean" with STANDARD STEEL "FLUSHER FLEETS." Above is a single order of eight flushers, designed and engineered by STANDARD STEEL WORKS, carrying the emblem of DALLAS as a reminder to the tax-payers that "a good town is a clean town."

RIO DE JANEIRO . . . Nothing but the best for South America. Rio De Janeiro City Officials specified their needs . . . STANDARD STEEL again met the specifications with this "Flusher Fleet" of nine powerful streamlined flushers.

● ***STANDARD STEEL FLUSHERS*** are fighting dirt the world over. Providing a full "gutter to gutter" 60 Pound Flush from each nozzle, STANDARD STEEL FLUSHERS work fast — making extra miles of cleaning possible every day from each unit. They carry a heavy load — reload quickly — they're easy to operate — and embody every new mechanical feature as well as streamlined beauty to reflect the progressive spirit of any city. Most cities now buy STANDARD STEEL FLUSHERS by the FLEET. Write for catalog and complete details.

OTHER PRODUCTS OF STANDARD STEEL
ASPHALT DISTRIBUTORS . . . BURNERS . . . POWER AND TRACTION DRIVEN CONSTRUCTION BROOMS . . . MAINTENANCE DISTRIBUTORS . . . TAR KETTLES . . . AGGREGATE SPREADERS . . . STREET FLUSHERS . . . PIPE LINE EQUIPMENT . . . SUPPLY TANKS . . . SHELVING HARDWARE . . . AND AGRICULTURAL EQUIPMENT

Built to Standard The Highest

Standard Steel Works, Inc. NORTH KANSAS CITY, MO. FL-4

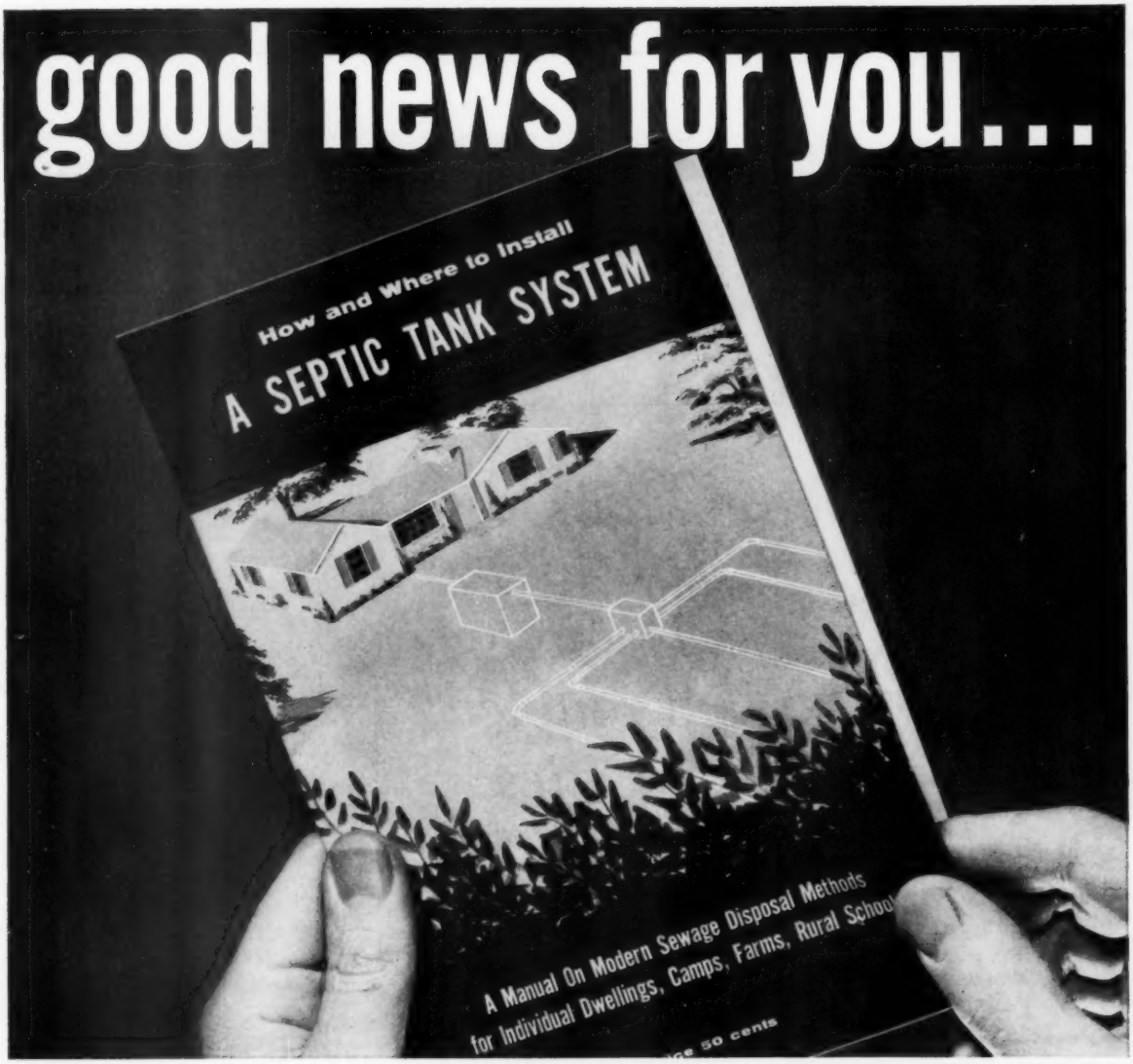
New Microphone for 2-Way Radios

This Dynamic microphone for mobile 2-way radios has a built-in transistor amplifier. The unit provides clearer, crisper voice reproduction than conventional microphones. A combination speaker-microphone (illustrated) functions as a speaker when not being used as a microphone. Additional information is available from Motorola Communications & Electronics, Inc., 4501 W. Augusta Blvd., Chicago 51, Ill.

Consulting Firm Opens New Orleans Branch

The opening of a branch office at 1915 Tulane Ave., New Orleans, La., is announced by Frederic R. Harris, Inc., New York consulting engineers. The New Orleans office will be headed by Eugene H. Harlow, a vice-president of the consulting firm.

good news for you...


How and Where to Install
A SEPTIC TANK SYSTEM
A Manual On Modern Sewage Disposal Methods
for Individual Dwellings, Camps, Farms, Rural

Here's a complete engineer's manual on septic tank installation

For everyone concerned with codes affecting septic tank installations, this brand new illustrated manual on "How and Where To Install A Septic Tank System" will be invaluable. It's a book that Building Code Officials everywhere should keep right at hand.

Prepared in collaboration with authoritative sources, it contains detailed diagrams and sketches, plus easy-to-follow instructions. It includes sections on: Choosing the Best Location —Establishing the Proper Grade —Determining Size—Building the Tank—Laying Out Disposal Fields.

Brown Company—makers of Bermico bituminized-fibre pipe for house to septic tank or sewer connections, and Bermiseptic perforated pipe for septic tank disposal fields—will gladly send interested Code Officials a free copy of this important handbook.

This is a Special Offer for a limited time—so fill out and mail the attached coupon below, today! Brown Company, 150 Causeway St. Boston 14, Mass.

Brown Company, Dept. TB-5
Sales Offices: 150 Causeway St., Boston 14, Mass.

Send me **FREE** copy of your 50¢ booklet, "How and Where To Install a Septic Tank System."

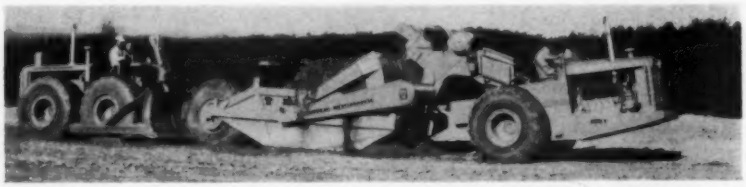
Name_____

Title_____

Street_____

City_____ **Zone**____ **State**____

New, Fast-Loading Scraper



The Fullpak scraper is controlled by LeTourneau-Westinghouse brushless electric motors located at the points where power is needed.

Cities can use the new Model C Fullpak scraper for every grading job and for hauling cover material on larger sanitary landfill operations. The 18-cubic-yard scraper is designed for faster loading and better boiling, and for carrying larger loads. It is built wider and lower than the previous Model C scraper offered by LeTourneau-Westinghouse Co.

The new Fullpak is easy to operate and provides the operator with a clear view of the blade, load and pusher. A new 18-yard bowl increases heaped capacity more than 12% over that of the previous Model C, while retaining the same 12.2-yard struck capacity.

A specially curved deflector plate on top of the tailgate gives better "roll" to improve the dirt's boiling action. In turn, this boiling eliminates voids, fills corners and apron, and provides extra heaping of the load.

A more detailed description of the Model C Fullpak scraper is available from the LeTourneau - Westinghouse Co., Peoria, Ill. Write directly, or you may use the Post Card located for your convenience on the insert following Page 34. Circle No. 961.

40% More Rainfall for Drought-Troubled Cities

Cloud seeding with silver iodide is the answer!

Cloud seeding is rolling up a documented record of success in water-shortage areas. Instead of seeding the clouds with "dry ice" scattered by aeroplanes, investigate the *far less expensive* method of seeding from the ground, with silver iodide vaporized by ground generators. Case histories furnish convincing proof of the success of this method. Here are two such cases:

DALLAS, TEXAS

In the hope of alleviating a serious water shortage, the City of Dallas contracted with Water Resources Development Corporation for a six-months period from November 22, 1952 to May 22, 1953. Fifteen ground generators were located strategically throughout the area to influence possible storm situations. Between January 1 and June 1, the net increase in water storage was almost equal to the combined gain during the same months of the preceding TWO years.

During the second year of operation, nineteen generators were used, to insure complete coverage of the target area. By comparison with adjacent unseeded sections, the watershed of the City of Dallas profited by approximately 30 ADDITIONAL INCHES OF RAINFALL, OR ABOUT 50% INCREASE of normal precipitation for the total operational period.

GREENSBORO, N. C.

In October, 1954 the City of Greensboro, N. C., too, was confronted with a serious water shortage, with the possibility of no water at all for human consumption after thirty days. The City contracted with Water Resources Development Corporation for a two-months weather-modification program beginning October 11, 1954. Then came the hurricane—"Hazel"—so cloud seeding was discontinued from October 15 to 21. In the final evaluation of results from the operations, the rainfall that fell during this period was excluded from all calculations.

On the evidence of data available for assessing the value of the cloud seeding operations to the WATERSHED of the City of Greensboro, it was concluded that the target area profited to the extent of 40% to 50% over unseeded adjacent areas to the south and west.

NOTE:—A sustained program over a period of years would minimize the need for expensive construction of new water storage facilities, to meet the ever-increasing demands for water supply.

Write for leaflet giving further details.

Water Resources Development Corp.

460 South Broadway, Denver 6, Colo.

Merger Negotiations Discontinued

D. E. Broggi, president of Neptune Meter Co., 19 W. 50th St., New York 20, N. Y., and Eugene D. Stirlen, president of Eastern Industries, Inc., Norwalk, Conn., have jointly announced the cessation of discussions looking toward a combination of the two companies. After careful and complete analysis of all the factors involved, it has been concluded that such a combination would not be in the best respective interests of their companies.

Neptune Meter Co., the world's leading manufacturers of water meters, has plants in Long Island City, Wallingford, Conn., Punxsutawney, Pa., and Toronto, Canada.

Eastern Industries, Inc. manufactures electronic vehicle actuated traffic control systems, radar speed meters, aircraft pumps and hydraulic equipment. The company's facilities are located in Hamden, East Norwalk, Conn., and Newton, Mass.

it's almost magic..

. . . handling records with DIEBOLD super elevator files

It's almost magic. You remain seated. Touch a button. Each record is brought to your finger-tips . . . in less time than you could get up from your chair!

It's astounding . . . how rapidly operators can find, refer to or post records . . . housed in motorized Diebold Super Elevator Files!

It is the new way to handle large-volume card records of all kinds (up to 300,000 per unit) . . . including active master-deck tab cards.

Super Elevator Files save up to 50% in time and space costs. They improve record controls and eliminate "slow-downs" caused by operator fatigue. For complete information on new low-cost large-volume record-keeping efficiency, call your local Diebold representative, or mail the coupon today.

N-262-DI

Diebold®

INCORPORATED

1030 Mulberry Rd., S. E. • Canton 2, Ohio

Get the facts. Ask for case histories reporting initial investment write-off in 5 to 18 months.

Diebold, Incorporated
1030 Mulberry Rd., S. E.
Canton 2, Ohio

Please send literature and case histories on Super Elevator File for records.

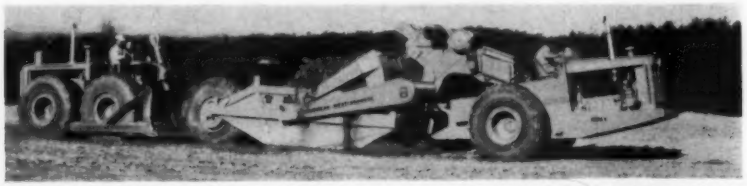
Firm _____

Individual _____ Title _____

Street _____

City _____ Zone ___ State _____

New, Fast-Loading Scraper



The Fullpak scraper is controlled by LeTourneau-Westinghouse brushless electric motors located at the points where power is needed.

Cities can use the new Model C Fullpak scraper for every grading job and for hauling cover material on larger sanitary landfill operations. The 18-cubic-yard scraper is designed for faster loading and better boiling, and for carrying larger loads. It is built wider and lower than the previous Model C scraper offered by LeTourneau-Westinghouse Co.

The new Fullpak is easy to operate and provides the operator with a clear view of the blade, load and pusher. A new 18-yard bowl increases heaped capacity more than 12% over that of the previous Model C, while retaining the same 12.2-yard struck capacity.

A specially curved deflector plate on top of the tailgate gives better "roll" to improve the dirt's boiling action. In turn, this boiling eliminates voids, fills corners and apron, and provides extra heaping of the load.

A more detailed description of the Model C Fullpak scraper is available from the LeTourneau - Westinghouse Co., Peoria, Ill. Write directly, or you may use the Post Card located for your convenience on the insert following Page 34. Circle No. 961.

40% More Rainfall for Drought-Troubled Cities

Cloud seeding with silver iodide is the answer!

Cloud seeding is rolling up a documented record of success in water-shortage areas. Instead of seeding the clouds with "dry ice" scattered by aeroplanes, investigate the *far less expensive* method of seeding from the ground, with silver iodide vaporized by ground generators. Case histories furnish convincing proof of the success of this method. Here are two such cases:

DALLAS, TEXAS

In the hope of alleviating a serious water shortage, the City of Dallas contracted with Water Resources Development Corporation for a six-months period from November 22, 1952 to May 22, 1953. Fifteen ground generators were located strategically throughout the area to influence possible storm situations. Between January 1 and June 1, the net increase in water storage was almost equal to the combined gain during the same months of the preceding TWO years.

During the second year of operation, nineteen generators were used, to insure complete coverage of the target area. By comparison with adjacent unseeded sections, the watershed of the City of Dallas profited by approximately 30 ADDITIONAL INCHES OF RAINFALL, OR ABOUT 50% INCREASE of normal precipitation for the total operational period.

GREENSBORO, N. C.

In October, 1954 the City of Greensboro, N. C., too, was confronted with a serious water shortage, with the possibility of no water at all for human consumption after thirty days. The City contracted with Water Resources Development Corporation for a two-months weather-modification program beginning October 11, 1954. Then came the hurricane—"Hazel"—so cloud seeding was discontinued from October 15 to 21. In the final evaluation of results from the operations, the rainfall that fell during this period was excluded from all calculations.

On the evidence of data available for assessing the value of the cloud seeding operations to the WATERSHED of the City of Greensboro, it was concluded that the target area profited to the extent of 40% to 50% over unseeded adjacent areas to the south and west.

NOTE:—A sustained program over a period of years would minimize the need for expensive construction of new water storage facilities, to meet the ever-increasing demands for water supply.

Write for leaflet giving further details.

Water Resources Development Corp.

460 South Broadway, Denver 6, Colo.

Merger Negotiations Discontinued

D. E. Broggi, president of Neptune Meter Co., 19 W. 50th St., New York 20, N. Y., and Eugene D. Stirlen, president of Eastern Industries, Inc., Norwalk, Conn., have jointly announced the cessation of discussions looking toward a combination of the two companies. After careful and complete analysis of all the factors involved, it has been concluded that such a combination would not be in the best respective interests of their companies.

Neptune Meter Co., the world's leading manufacturers of water meters, has plants in Long Island City, Wallingford, Conn., Punxsutawney, Pa., and Toronto, Canada.

Eastern Industries, Inc. manufactures electronic vehicle actuated traffic control systems, radar speed meters, aircraft pumps and hydraulic equipment. The company's facilities are located in Hamden, East Norwalk, Conn., and Newton, Mass.

it's almost magic..

. . . handling records with

DIEBOLD super elevator files

It's almost magic. You remain seated. Touch a button. Each record is brought to your finger-tips . . . in less time than you could get up from your chair!

It's astounding . . . how rapidly operators can find, refer to or post records . . . housed in motorized Diebold Super Elevator Files!

It is the new way to handle large-volume card records of all kinds (up to 300,000 per unit) . . . including active master-deck tab cards.

Super Elevator Files save up to 50% in time and space costs. They improve record controls and eliminate "slow-downs" caused by operator fatigue. For complete information on new low-cost large-volume record-keeping efficiency, call your local Diebold representative, or mail the coupon today.

N-262-DI

Diebold®

INCORPORATED

1030 Mulberry Rd., S. E. • Canton 2, Ohio

Get the facts. Ask for case histories reporting initial investment write-off in 5 to 18 months.

Diebold, Incorporated
1030 Mulberry Rd., S. E.
Canton 2, Ohio

Please send literature and case histories on Super Elevator File for records.

Firm _____

Individual _____ Title _____

Street _____

City _____ Zone ____ State _____

LINDSAY MODEL 55
RADIAL TYPE AIR COMPRESSOR

55 C.F.M. Air Delivery

Weighs 1150 lbs.

Truly Portable

Inexpensive to Own and Operate

Runs Medium Breaker or Drill

Write for Details

P. K. LINDSAY CO.

DEERFIELD N. H.
Everett, 49 Mass.

Catch Basins Come Clean

. . . with a

HAYWARD ORANGE PEEL

Whatever is in a catch basin can be removed by a Hayward orange peel catch basin bucket.

Catch basin cleaning is a special job and Hayward developed a bucket to make the job easy.

Write for Bulletin 805

THE HAYWARD COMPANY

50 Church Street, New York 7, N. Y.

INTEGRITY COUNTS in PUMPS, Too

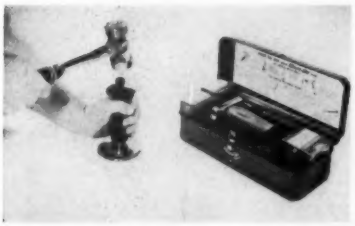
This DISTINGUISHED PUMP will win your RESPECT
TYPE OJ
Aurora Horizontally Split Case, Double Suction, Single Stage Centrifugal Pump
For general water supply for municipalities, industries, office buildings, institutions—also—for handling liquids, chemical solutions, oils etc., in a wide variety of industries. Write for Bulletin 105-BM for further details.
AURORA Always PUMPS

DISTRIBUTORS IN PRINCIPAL CITIES

AURORA PUMP DIVISION
THE NEW YORK AIR BRAKE COMPANY

66 LOUCKS STREET • AURORA • ILLINOIS

A Simple Fastener



A hammer blow on Shure-Set, and the fastener is secure.

If a sign needs to be bolted to a wall, if a desk, filing cabinet, or small motor needs to be bolted to the floor, this little device will install the fasteners to do the job. The worker simply inserts the fastener into the tool, strikes the tool sharply with a hammer, and the fastener is there to stay.

The entire kit contains the Shure-Set fastening tool, as well as long and short collars, and two sizes of stud holders and drive rods. Its cost is $27.95. It is made by RAMSET FASTENING SYSTEM, OLIN MATHIESON CHEMICAL CORP., CLEVELAND, OHIO.

For detailed information, write the company directly, or you may use the Post Card on the insert following Page 34. Circle No. 940.

Aid in Solving Water and Sewage Problems

M. E. Rogers

Six new district engineers have been appointed to aid consulting engineers and municipal water and sewage works superintendents solve their meter, feeder and control problems. The new service

Recently Adopted U. S. Standard Signs You'll Find in the **NEW** *Lyle Catalog*

LYLE HAS THEM

For latest signs, for all your signs. LYLE HAS THEM!

Just Out!—Lyle's New 40-page Sign Manual; it catalogs hundreds of street, traffic and warning signs and the latest information on current U.S. Standards.

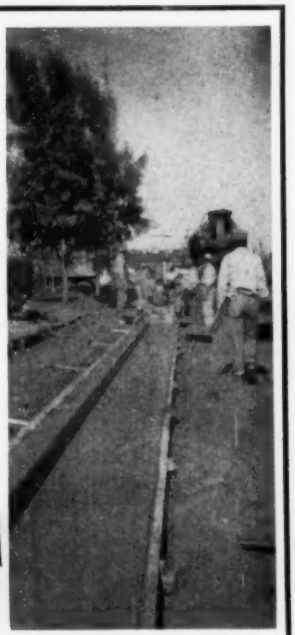
Write for your free copy today!

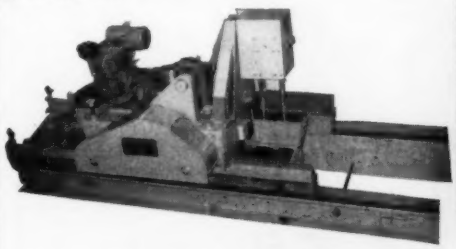
LYLE SIGNS, INC.

2723 UNIVERSITY AVE. S. E.
MINNEAPOLIS 14, MINNESOTA

Pave gutters, curbs and sidewalks in half the time at half the cost with a DOTMAR PAVER!

The Dotmar requires far smaller paving crew, eliminates use of face forms—readily paves up to 10′ of finished curb and gutter per minute. Paves integral gutter, curb and sidewalk or sidewalk alone. For highway widening strips and median strip too. Greater concrete yield. Concrete is tamped mechanically. Send for Catalog 55.





Makers of AIR ACE HAMMER AND TOOLS

"The Size of a pistol—power like a cannon"

Dotmar INDUSTRIES Inc.

511 HANSELMAN BUILDING KALAMAZOO, MICHIGAN

was founded by Builders-Providence, Inc., Proportioneers, Inc., and the Omega Machine Co., Divisions of B-I-F Industries, Inc., of Providence, R. I. It will be headed by M. E. Rogers, project sales manager of Builders-Providence, Inc.

The six new district engineers include C. K. Perkins, D. A. Wood, B. E. Hamlett, G. E. Riepe, E. F. Morey, Jr., and L. H. Chamberlain. Each will serve a regional area of several states. The New England area will be served by engineers in the home office in Providence.

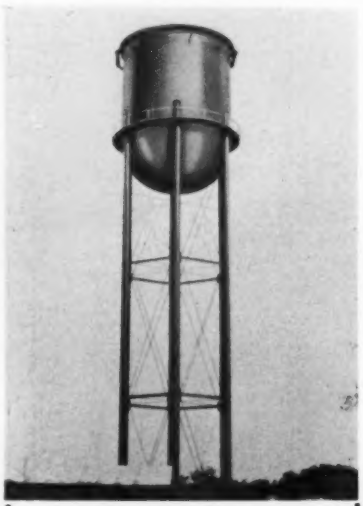
Combats Insect Pests

Fight flies and mosquitoes in your community with the Model 100 E Rotomist, an efficient sprayer that assures accurate, "on-target" delivery of insecticides. The air delivery unit has a 29-inch axial flow fan which delivers 28,000 cubic feet of air per minute, at a velocity of 100 miles per hour. Dependable airplane-type hydraulic controls are designed to rotate the turntable 360° right or left and aim the counter-balanced

discharge outlet through a 110° arc vertically.

The Model 100 E is powered by a Willys "Jeep" 4-cylinder, 70-hp engine. The spray system includes a John Bean Royalette pump, an enclosed oil-bath lubricated, plunger-type pump that delivers seven gallons per minute at 400

TRINITY VALLEY
for all CAST IRON WATER WORKS FITTINGS
Available On Order
AWWA Standard Bell Spigot Watermain Fittings—24 through 36 inch.
Ring Tite Fitting 3" thru 12"
Available Immediately From Stock
AWWA Approved Short Body and Mechanical Joint Watermain Fittings—2 through 12 inch.
AWWA Standard Bell Spigot Watermain Fittings—2 through 24 inch.
TRINITY VALLEY IRON AND STEEL CO.
PE 7-3141
Fort Worth, Texas
P. O. Box 664



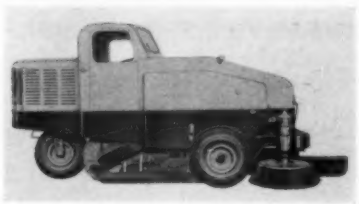
Water Tank Construction Repair and Painting

CHICAGO TANK & BRIDGE CO.
4404 W. State St., Rockford, Illinois

pounds pressure; and a new 100-gallon "mixing bowl" shaped tank.

More detailed information on the new Rotomist is contained in *Bulletin L 1109*. For your copy, write the JOHN BEAN DIVISION, FOOD MACHINERY AND CHEMICAL CORP., LANSING, MICH., or you may use the Post Card on the insert following Page 34. Circle No. 937.

Street Sweeper to Carry Greater Loads



Production has started on a street sweeper that will pick up and carry more than four cubic yards of dirt and litter, according to G. M. Wayne, executive vice-president of WAYNE MFG. CO., 1219 E. LEXINGTON ST., POMONA, CALIF. The new Wayne Model 550 will feature power steering, power brakes, and a special pickup broom adjustment as standard equipment. Also a Fibreglas cab with safety-glass roll up windows.

Like the Wayne Model 450, the large sweeper is designed with a gutter broom ahead of the front wheels, facilitating full vision of both traffic conditions and sweeping operations. Floating action brooms automatically raise or lower to sweep in depressions or over high places with equal efficiency.

Further details on the Model 550 are available from the manufacturer. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 932.

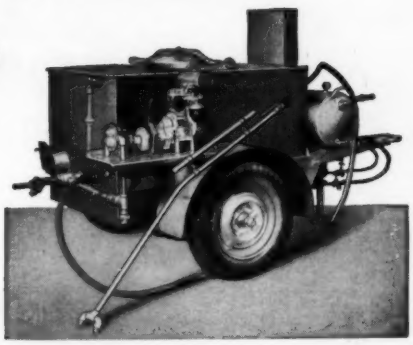
Push-Button Filing

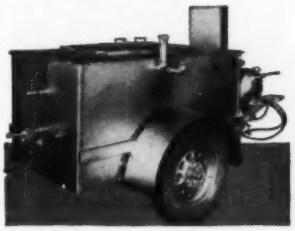
Faster filing and finding, operator comfort and space conservation were objectives in a new file that features push-button selection and tray positioning. At the touch of a button, the selected trays are positioned at the ideal working level.

The Filevator accommodates 250,000 3- by 2¼-inch cards, 127,000 3- by 5-inch cards; 85,000 tabulating cards; or 60,000 5- by 8-inch cards. Every card is quickly accessible without bending. Standard models include 110-volt AC

White HEATING KETTLES

FOR *SAFER* MELTING OF BITUMINOUS MATERIALS

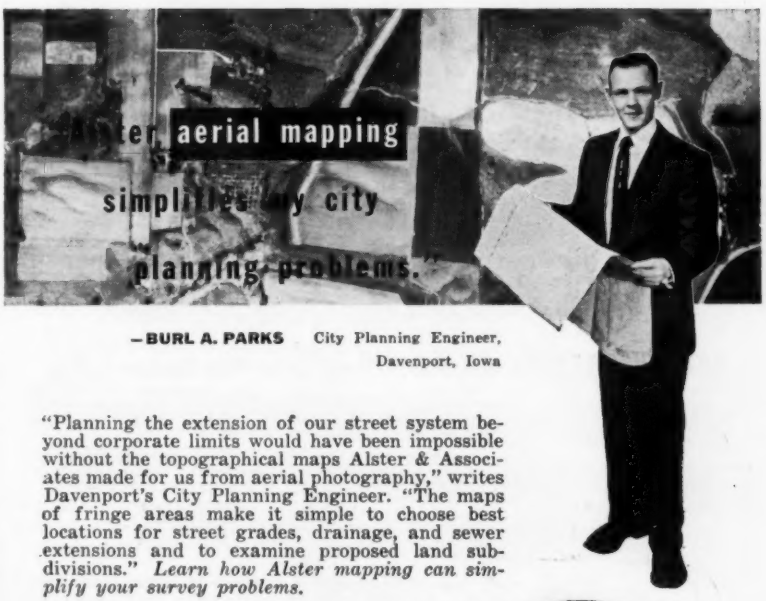




Tool Heaters
Surface Heaters
Special F-10 Compound Kettle
Torches and Burners

Capacities from 80 to 325 gallons. All equipped with *exclusive* FIRE PROOF TOP (hinged tops available for roofing use). Operator and equipment are *protected* from flash fires. Complete line of accessories optional. Choice of kerosene and propane burners.

White MANUFACTURING COMPANY
ELKHART 1, INDIANA



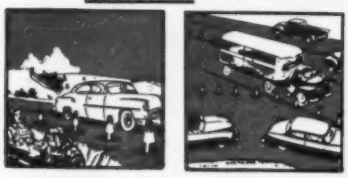
—**BURL A. PARKS** City Planning Engineer, Davenport, Iowa

"Planning the extension of our street system beyond corporate limits would have been impossible without the topographical maps Alster & Associates made for us from aerial photography," writes Davenport's City Planning Engineer. "The maps of fringe areas make it simple to choose best locations for street grades, drainage, and sewer extensions and to examine proposed land subdivisions." *Learn how Alster mapping can simplify your survey problems.*

Free booklet tells how Alster methods cut survey costs up to 75%, get construction started weeks earlier!

Dept. A-1
6135 Kansas Ave., N.E., Washington 11, D.C.
29 E. Madison St., Chicago 2, Illinois

ALSTER & ASSOCIATES, INC.
AERIAL SURVEYS

RESPECTED!
OBEYED!
SAFE-T-CONE*
All-Rubber TRAFFIC GUIDES
*U.S. Pat. Number 2,719,505
The silent workhorse of efficient traffic control!

NOW IN 3 SIZES!
SPECIAL ADAPTERS INCREASE USES!
Signs-Flashers-Flag Adapters
28 IN.
18 IN.
12 IN.
PAINTED OR REFLECTORIZED
12" size all yellow on black base only. 18" and 28" available in standard tri-color or REFLECTORIZED all-yellow on black base.
NEW! Flasher lights!
Uses standard 6-volt battery. Fits into top of all sizes. Unbreakable plastic lens.
2121
Low cost, long life, light weight make SAFE-T-CONES ideal for every traffic control need. Tough and strong, they're made to last, even with most abusive use.
Write for complete descriptive folder
SAFE-T-CONES are made only by RADIATOR SPECIALTY CO., Charlotte, N. C.

ALMOST EVERYONE KNOWS
GOLDEN-ANDERSON
MAKES THE FINEST
ALTITUDE VALVES
But did you know...
GOLDEN-ANDERSON also makes these other Fine-Quality Valves
• SURGE RELIEF • PRESSURE REDUCING
• SWING CHECK • ELECTRIC CHECK • FLOAT
• SOLENOID • FLOWTROL
All of above are available in either ANGLE or GLOBE body design in sizes 2" through 36".
Write for technical bulletins.
Golden Anderson Valve Specialty Company
1200 RIDGE AVE., PITTSBURGH 33, PA.
Designers and Manufacturers of VALVES FOR AUTOMATION

Purchasing

motorization, push-button station selection, trays with dividers, work shelf, locker compartment, and a choice of large or small swivel posting arms.

For complete Filevator information and descriptive literature, write the LeFebure Corp., Cedar Radids, Ia., or you may use the Post Card on the insert following Page 34. Circle No. 951.

"Slow, Playground"

The month of May is sale time at Grimm Stamp & Badge Co., St. Louis, Mo. The firm is holding a special sale on street and highway traffic signs, including playground warning signs, parking limitation signs, warning signs and symbols, and rigid channel posts for mounting.

The traffic signs are of die-embossed, heavy-gauge steel, made to meet U. S. Standard Specifications for all states and U. S. possessions. The latest wordings, styling of letters, colors, shapes and sizes are used.

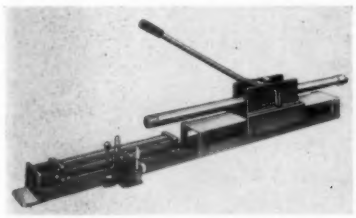
Complete details of the special offer and a catalog of traffic signs may be obtained from Grimm Stamp & Badge Co., 8105 Rosalie Ave., St. Louis 17, Mo. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 957.

Installs Pipe Underground

"The world's fastest pipe pusher," is how Mercury Hydraulics, Inc., describes the new "Speed-Thru" machine. The pipe pusher permits "top loading of pipe" without using clamps that require wrenches or other tightening devices, and without cogs or ratchets. It fea-

tures a long, fully powered forward and return stroke.

The new hydraulic machine delivers a continuous 21-inch hydraulic-powered thrust, and is powered by either gas engine power units or truck electric power units. One man operating two controls pushes or pulls pipe rapidly and with ease.



The "Speed-Thru" pusher will be delivered complete and ready for work, with the selected power unit, two 25-foot hydraulic pressure and return hoses with quick couplers at each end, and dust caps and dust plugs to protect the couplers.

The "Speed-Thru" pusher is a product of MERCURY HYDRAULICS, INC., 2440 BLAKE ST., DENVER 5, COLO. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 952.

Keeps Cool Drinking Water on the Job

One sure way of keeping workmen on the job, is to furnish them with cool, clean drinking water. You can do this with Water Boy portable coolers. Cans and coolers are available in 2- and 3-gallon sizes with bails, and in 5- and 10-gallon sizes with handles. All models are available with or without faucets.

Water Boy coolers and cans are designed with Sparkleen liners that are non-toxic and taste and odor free. All "heavy duty" coolers are equipped with metal lugs for paper cup dispensers.

For additional data, write SCHLUETER MANUFACTURING CO., 4616 N. BROADWAY, ST. LOUIS 7, MO., or you may use the Post Card on the insert following Page 34. Circle No. 942.

Model 16-S
STREET SWEEPERS FRIEND

SPEED-UP STREET CLEAN-UP

Ruggedly built, light running and perfectly balanced, TARCO can carriers are available in three styles with a choice of practical features. All models are guaranteed . . . designed to help get the dirt and trash your power sweeper can't touch!

Street and Sanitation departments know there's no substitute for TARCO built-to-take-it construction and economical performance. See your nearest dealer for prices and details . . . or write for descriptive folder.

TARRANT MFG. CO.
27 Jumel Pl., Saratoga Springs, N. Y.

TARRANT MANUFACTURING CO. TARCO SARATOGA SPRINGS, N.Y.

Don't build an obstacle course

get wide-open

spaces—with

Butler buildings

Why pay for building space you can't use? Poles, posts, columns, roof trusses—all these rob you of usable space. But there's no waste in Butler buildings.

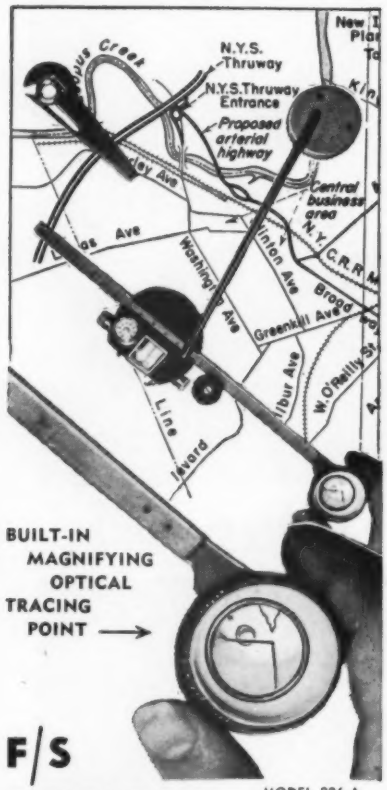
Rigid frames span the entire width of Butler buildings. There are no posts to eat up storage space. No obstructions to get in the way of men or machines . . . nothing to interfere with the smooth flow of freight or the efficient arrangement of offices, assembly lines, cafeterias. Truss-free interiors permit storage right up into the roof peak, placement of lights, sprinkler systems, and other fixtures completely out of the way of floor traffic. For the whole story on Butler metal buildings, ask your Butler Builder.

Consult the yellow pages of your telephone directory for name of your Butler Builder, or write on your company letterhead for informative brochure.

BUTLER STEEL PRODUCTS

BUTLER MANUFACTURING COMPANY
7350 East 13th Street, Kansas City 26, Missouri
Manufacturers of Steel Buildings • Oil Equipment
Farm Equipment • Dry Cleaners Equipment
Outdoor Advertising Equipment • Special Products
Sales Offices in Los Angeles, Richmond, Calif.
Houston, Tex. • Birmingham, Ala. • Minneapolis, Minn.
Chicago, Ill. • Detroit, Mich. • New York, N. Y.
Burlington, Ont., Can.

GOODBYE EYESTRAIN!



MODEL 236-A

F/S OPTICAL PLANIMETER

Exclusive F/S Patent Design. Eliminates Eye-Strain, Increases Precision, Speed.

- New free-wheeling, wide-angle, magnifying lens has built-in tracing point——glides smoothly along outline, will not stick or tug—eliminates parallax.
- Finger-flick Zero Setting Control brings both wheels automatically to zero—eliminates need for initial readings and for handling measuring wheel.
- Enclosed wheel carriage keeps out dust and maintains high precision—incorporates plexiglas lens to simplify wheel readings.

Model 236A—(Illustrated) Adjustable-arm Planimeter $75.00

Model 236F—Fixed Arm 71.00

Model 237A—Universal Planimeter for both polar and linear measurements 125.00

Model 225/TER-A—Conversion Unit for conversion of polar into linear planimeter 50.00

Ask for complete literature on F/S planimeter

Serviced in U. S. A.

FILOTECNICA SALMOIRAGHI INC.

41-14 24TH STREET, LONG ISLAND CITY 1, N. Y.

Purchasing News

Rubber-Tired Ditch Roller

A roller like this, when used to compact backfill in a water or sewer trench, is said to eliminate the uncertainty of hand tamping or ponding.

Worries about compacting the backfill in a water or sewer trench need no longer arise with this new rubber-tired roller attachment on the job. The roller provides the compaction through two tires loaded with a 1,650-pound concrete weight. It is designed to work effectively in trenches as deep as six feet.

TAX EQUALIZATION APPRAISALS

THE J. M. CLEMINSHAW CO.

Appraisers

Nationally Recognized for
Municipal and County Revaluation
Since 1923

An Authoritative Professional Service
Universally Accepted by Assessing Officers
and the Taxpaying Public

Write for Brochure and Client List

Main Office:
1132 Union Commerce Bldg.
Cleveland 14, Ohio

District Offices:

Hohokus, N. J.	50 Edgewood Dr.	Tel. Gilbert 4-4883
Plainville, Conn.	11 Williams St.	Sherwood 7-0676
Milwaukee, Wisc.	2014 Sunset Court	Tel. Spring 4-6680

The roller can be mounted on Caterpillar 12, 112, or 212 graders. Cable controls, fed from two drums furnished with the equipment, permit the operator to lift or lower the roller mechanically.

The roller has an adjustable levelling blade that helps to insure even lifts during the compacting process. This blade can be turned to the right or left, or it can bulldoze straight ahead. The roller has already seen a great deal of use on pipeline work in South Carolina.

In addition to pipeline work, the roller can be used to compact widened streets, or portions of streets that will carry curb and gutter alone.

The new rubber-tired roller attachment is a product of JOHN R. COOK, P. O. BOX 597, AUGUSTA, GA. For full information, write the company directly, or you may use the Post Card located for your convenience on the insert following Page 34. No. 958.

New Fluorescent Lighting Units

Not only the intrinsic advantages of fluorescent lighting—glare-free light, even distribution, true color, and greater lumen output—but the spectacular appearance of the equipment has commanded more municipal interest than even mercury vapor in its recent youth.

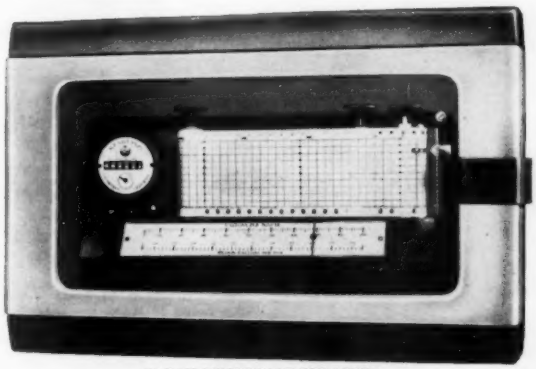
One of the most recent offerings is the LUXaire in four standard lengths: 2, 4, 6 and 8 feet. Each unit contains two fluorescent lamps (slimline or rapid-start) of rated life 7,500 to 10,000 hours.

To harmonize with the LUXaire styling, two new aluminum standards have been designed. While functional and practical, these standards are trim and attractive—especially the sweeping davit-type sought by architects.

For literature describing these new designs, write PFAFF & KENDALL, 84 FOUNDRY ST., NEWARK 5, N. J., or you may use the Post Card located for your convenience on the insert following Page 34. Circle No. 955.

flow information at your finger tip!

- MAIN-LINE METERS
- FLOW and CHEMICAL FEED CONTROLS
- INSTRUMENTS



60 DAY STRIPCHART RECORDER

FLOW CONTROL EQUIPMENT DESIGNED TO MEET YOUR REQUIREMENTS. Let us send you BULLETIN 314 descriptive of our equipment. Contact any of the Sparling Offices listed below.

SPARLING METER COMPANY

Incorporated

BOX 3277 — LOS ANGELES 54, CALIFORNIA

ATLANTA 3 ..... 66 Luckie Street NW	225 No. Temple City Blvd. EL MONTE, CALIF.
BOSTON 8 ..... 6 Beacon Street	650 First Avenue West.....ROSELLE, N. J.
CHICAGO 8 ..... 1500 South Western Ave.	85 Industrial St. ..... SAN FRANCISCO 24
CINCINNATI 2 ..... 626 Broadway	1932 First Avenue ..... SEATTLE 1
DALLAS 1 ..... 505 N. Ervay St.	207 Queens Quay West.....TORONTO, CAN.
KANSAS CITY 6, MO. ..... 6 E. Eleventh St.	248 London Rd. ..... ROMFORD, ENGLAND

Versatile

"GUNITE"

FOR REPAIRS TO SEWAGE DISPOSAL PLANT

Before

After

The existing concrete on this sewage disposal plant in western New York had deteriorated to an alarming extent and necessitated the rebuilding of practically the entire plant above ground. The pictures above are evidence that "Gunite" repair is not only practical but that it resulted in complete restoration of the plant.

On job after job, "Gunite" proves its worth. Our engineers will inspect your facilities and make recommendations for repairs without obligation on your part.

Engineers: For detailed information on "Gunite" the versatile repair material for all types of concrete structures, send for our 48 page bulletin. Pease use the coupon. Mail to

PRESSURE CONCRETE CO.

Dept. AC

"GUNITE" Contractors and Engineers

315 S. Court St., Florence, Alabama
33 N. LaSalle St., Chicago, Ill.
193 Emmet St., Newark, New Jersey

Pressure Concrete Co.
315 S. Court St.
Florence, Ala.
Please send me the 48 page bulletin.
Name .....
Company .....
Address .....
City ..... Zone .... State .....
MAIL TODAY AC

STEEL

Every Kind

Quick Delivery

Plates, Structurals, Bars, Sheets, Tubes, etc. Carbon, Alloy, Stainless Steels, Babbitt Metal.

RYERSON

Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Wallingford, Conn., Philadelphia, Charlotte, N. C., Cincinnati, Cleveland, Detroit, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco, Spokane, Seattle.

Purchasing News

Speeds Street Maintenance

Municipalities needing grading equipment, and not wishing to go into the expense of a self-propelled unit, will appreciate this trailer-type Husky grader. Each Husky is available with an optional "one-man control" feature, placing all controls within easy reach of the operator. With this feature, one man does the work of both driver and operator.

The new grader is available in four models, and may be used for maintaining streets and roads, ditching, and shoulder cutting. A Trailer Drag Shouldering attachment permits a complete maintaining operation with only "one round trip."

All Husky trailer models are fitted with a dual purpose hitch for attaching to either tractor or truck. Hydraulic controls are optional.

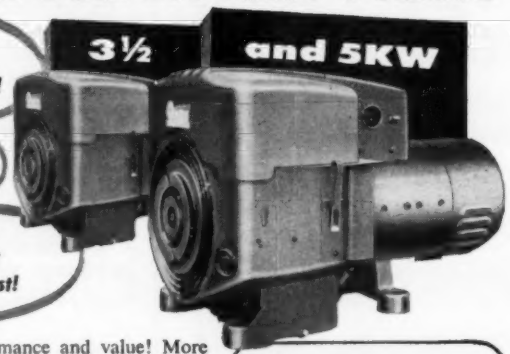
Complete details on the Husky grader may be obtained from the ENERGY FARM EQUIPMENT CO., MONTICELLO, IA. Write directly, or you may use the Post Card following Page 34. Circle No. 938.

New ONAN CCK Electric Plants

MORE OUTPUT *per pound of weight!*

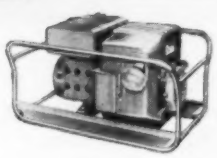
MORE OUTPUT *per gallon of fuel!*

MORE OUTPUT *per dollar cost!*



Way ahead in performance and value! More powerful, two-cylinder, air cooled Onan gasoline engines of 4-cycle, horizontally-opposed design give smooth, quieter, effortless performance. Short stroke and moderate speed cut engine wear, give longer life. Quality features include rotating Stellite-faced exhaust valves, solid Stellite valve seat inserts, full pressure lubrication. Onan's exclusive Vacu-Flo cooling system available for difficult or "buried" installations.

Completely Onan-built, with Onan gasoline engines direct-connected to Onan all-climate generators in compact, rugged units. Available in stationary, portable and standby models with a wide range of accessories.



PORTABLE MODELS
Available with carrying frames or 2-wheel dollies. Easily portable. Other Onan portable models: 500 to 10,000 watts.

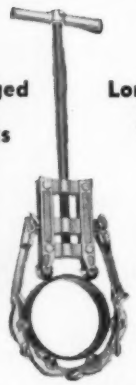
Write for folder on all CCK models

Onan ELECTRIC PLANTS

D. W. ONAN & SONS INC.

2554 University Avenue Southeast, Minneapolis 14, Minnesota

HEAVY-DUTY
ELLIS PIPE CUTTER
FOR CUTTING LARGE SIZE PIPE



Drop-Forged Frame and Links

Long-Lasting Cutter Wheels

Makes a Hit With Water Works Men

Cuts Pipe In or Out of Ditch

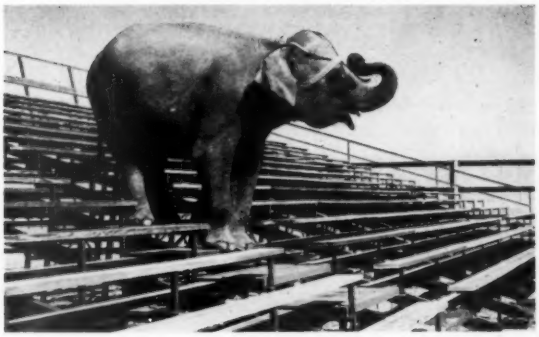
TWO SIZES

No. 01 for 4" to 8" Pipe
No. 1 for 4" to 12" Pipe

Write for Circular and Price List No. 35AC

ELLIS & FORD MFG. CO.
FERNDALE 20, MICH.

Elephant Feat



Spectator seating "with the extra margin of safety," is how the Reeves Steel Co. describes its line of small bleacher sections and large grandstands. To give their slogan extra weight, the company used a husky elephant from the Ringling Bros., Barnum & Bailey Circus. The weight that the elephant places on bleachers through the pads of his feet is five times greater than that of every possible person who could be crowded into the space.

Among the towns and cities that have bought Reeves bleachers and grandstands are Tampa, Miami, Jacksonville, St. Petersburg, Sarasota, and West Palm Beach, Fla.; Macon, Ga.; Louisville, Ky.; Indianapolis, Ind.; Topeka, Kans.; Charlotte, N. C.; and Birmingham, Ala.

For full details on sturdy, dependable spectator seating for all municipal events, write the REEVES STEEL CO., INC., 112 S. 12 ST., TAMPA 2, FLA., or you may use the Post Card located for your convenience on the insert following Page 34. Circle No. 953.

AMERICA'S
HEADQUARTERS
FOR
FIRE EQUIPMENT
AND
POLICE EQUIPMENT
•
WRITE FOR
NEW CATALOGS
•
W.S. DARLEY & CO.
ESTABLISHED 1908
CHICAGO 12, ILLINOIS

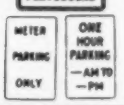
SterElators by Everson
Chlorine Gas Control Equipment
Visible Flow Indication
Vacuum Solution Feed
for
Water Works
•
Sewage Treatment
•
Industrial Plants
•
Swimming Pools
•
Easy to Install
•
Easy to Operate
•
Low Maintenance Cost
•
Everson STERELATORS can be furnished for fully automatic, semi-automatic and manual control
Write for STERELATOR Bulletins
EVERSON MFG. CORP.
203 W. Huron St., Chicago 10, Ill.

FROM THE WORLD'S FINEST DETECTION EQUIPMENT MANUFACTURERS
Let 1 LOCATING instrument do all your work...
GOLDAK Dualtronic MODEL LC-5
for pipes
for leaks
for valves
Here is the Instrument for which Municipalities have been looking... ONE Instrument that locates Pipes, Leaks and Valves, yet costs no more. Model LC-5 not only saves you money but does the job accurately and dependably. Ruggedly constructed. Compact. Lightweight. Simple, one man operation. Model LC-5 is fully guaranteed.
plus these BIG features:
1. Use as Pipe Locator, Leak Detector, Valve Locator.
2. Pin-Point Detection.
3. Automatic on-off and power switching.
4. Crystal microphone.
The GOLDAK Company
Leading Electronic Manufacturers
Since 1933
1544 W. Glenoaks Blvd.
Glendale 1, Calif.
WRITE FOR COMPLETE BROCHURE

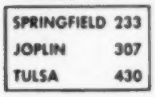
Special Sign SALE MAY ONLY

DIE-EMBOSSED, BAKED ENAMEL SIGNS MEET ALL U. S. SPECS.

Big 18"x24" heavy gauge steel. Black on Yellow background. Regularly $3.25 each. May special, in lots of six or more . . . $2.50 ea.



12"x18" Parking Restriction Signs. Green on White baked enamel. Choice of wordings. Regularly $2.25 each. May only, minimum six . . . $1.80 ea.



30"x24" Destination Signs. Black on White. 16 gauge steel. Maximum 4 lines. May Special. Plain $7.60 ea. Reflectorized $9.50 ea.

24" Diamond shaped Warning Signs. Black on Yellow. All signs first quality, newest styles, die-embossed. Reg. $4.25. In lots of six $2.80 ea.

Call or write today for complete May Special Offer, new price list and catalog.

GRIMCO Signs

8105 ROSALIE AVE., ST. LOUIS 17, MO.

You won't worry about drinking water if you use

IGLOO WATER COOLERS

Make an IGLOO water cooler standard equipment with your working crews. Clear, cool water means better workers, more work.

IGLOO out-cools and out-lasts the old-time water barrel because it's corrugated for extra life, all-steel made for extra strength, galvanized to be rust-proof, leakproof with double locked seams and sanitary to the Nth degree. There's an IGLOO for every need—2 to 15 gallon sizes.

BETTIS CORPORATION

P. O. DRAWER 9365 • HOUSTON 11, TEXAS

Purchasing News

New Mobil Sweeper Plant

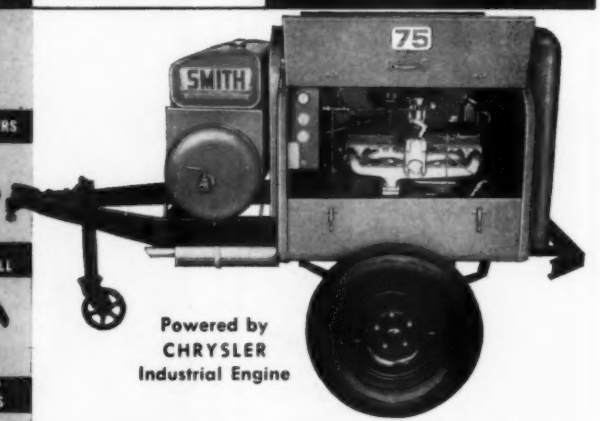
A new plant and yard at 5816 S. Boyle Ave., Los Angeles, Calif., has been opened by the Conveyor Co. for its Mobil Sweeper Division. The Division recently received orders for five Mobil Sweeper units from the City of Los Angeles and for four more street sweepers from Los Angeles County. Main offices of the Mobil Sweeper Division are at 3260 E. Slauson Ave., Los Angeles.

Manual Adding Machines

A new line of hand-operated adding machines includes a "shortcut keyboard" which permits several keys to be depressed at one time. Deposit slips and other narrow forms may be directly inserted for listing and totalling. The usual steps of entering figures by hand, then listing and totalling by machine, have

Power these tools FOR LESS with the

SMITH 75-P AIR COMPRESSOR



The Smith 75-P delivers continuous on-the-job compressed air—*saves* your big air compressors—*adds* to job profits. Actually delivers 4 more cu. ft. per minute than its 75 c.f.m. rating. Three cylinders are used for power, three for compression. Simple compact design—tow it everywhere, job to job. Designed for high compression with large valve area, smooth carburetion. Super-finished bearings and pistons; water-jacketed discharge area. Uses only 1½ gals. gasoline per hour! Has large toolboxes with hasps.

Write for literature and name of nearest Smith dealer.

GORDON SMITH and COMPANY

425 College Street • Bowling Green, Ky.

been easily reduced to one operation.

By depressing the proper key in a Thriftline column, the operator corrects any key depressed in error in that column. Subtraction is equally as easy with a conveniently located minus bar. No spacing operation is required as the machine prints totals immediately following the last item.

Additional details on the new line of hand-operated adding machines may be obtained from BURROUGHS CORP., DETROIT 32, MICH. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 959.

New Surveying Tools

A new surveyor's transit is currently being offered at a price reportedly lower than other comparable instruments.

The telescope is dustproof and moisture-proof, with internal focusing. It has the usual stadia wires with a ratio of 1:100 and the image produced is upright instead of inverted. Both horizontal and vertical circles are accurate to 20 seconds, and can be read by permanently mounted magnifiers. The circles are fully covered and protected, divided on solid silver. The instrument has an optical plummet, thus eliminating the swinging plum bob that causes difficulty in windy weather.

The instrument weighs 8½ pounds, and the tripod, approximately one pound. It is a product of Neuhoefer & Son, Inc., Vienna, Austria. It is marketed in the United States by GEO-OPTIC CO., INC., 170 BROADWAY, NEW YORK 38, N. Y.

A prism device is also being marketed as a surveying aid, asserted to permit eliminating one man from a property-survey party. The single pentagon prism measures 90° in one direction. The double prism turns 90° both to the left and the right from any base line. Both prisms are about the size of a plum bob. With them, the surveyor can also turn simple circular curves without the need to set up an instrument or the difficulty of using a long tape for a radius.

Full information on each can be obtained directly from the Geo-Optic Co., Inc., or you may use the Post Card on the insert following Page 34. Circle No. 939.

1st Step to
LOWER FLOOR CLEANING COSTS

Floor-King Mopping Outfit for mops to 36 oz.

Make floor cleaning fast, easy and efficient the Geerpres way and watch costs drop. What's more, with Geerpres wringers, your mops last longer and do more work. Exclusive interlock gearing gives powerful but controlled squeezing action to force mop down and eliminate splashing. Wring a mop as dry as you please without twisting or tearing in a Geerpres wringer.

Ruggedly constructed Geerpres wringers are made from the finest materials for long life. Electro-plated finish on all wringers is exclusive with Geerpres. Yet they are light, compact and so easy to handle on ball-bearing rubber casters.

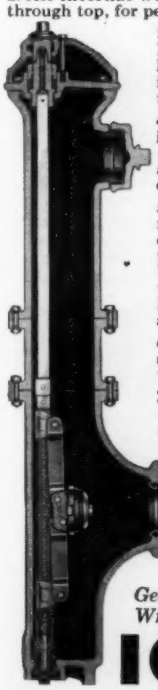
Sizes and styles for every mopping need. Complete line of accessories, too. Write for complete catalog or see your nearest jobber.

GEERPRES WRINGER, INC.
P.O. BOX 658 MUSKEGON, MICHIGAN

In hydrants, too, it's important to have
Unobstructed flow

Look at a cutaway view before you buy any hydrant! You'll be surprised how few provide an absolutely unobstructed waterway! And *no one* but Iowa offers you *all* this and much more—

1. Provides full and unobstructed waterway for maximum flow from main to nozzle.
2. All internal working parts removable through top, for periodic inspection.



3. Superintendents find Iowa hydrants easy to keep in "tip-top" operating condition—no special tools required.
4. Main valve holds tight in closed position so that—should hydrant be damaged—no loss of water, or flooding, will occur.
5. Two-piece operating nut eliminates binding or distortion of working parts (sometimes caused by expansion and contraction) — makes Iowa hydrants easy to open and close at all times.
6. Complete drainage by sure acting drain, prevents freezing.
7. Fully bronze mounted throughout—meet all requirements of A.W.W.A. —have proved their ruggedness and reliability to waterworks men everywhere.
8. Available with any type of connection.

Get ALL the facts! Write

IOWA
VALVE COMPANY
Oskaloosa, Iowa
A subsidiary of James B. Clow & Sons

Cities are Saving

WITH

SUNFLOWER

★ GANG MOWERS

★ ROTARY CUTTERS

Better Bilt — PRICED LOW — Patented Features — GUARANTEED

CITIES with park and right-of-way maintenance problems are getting fast, efficient, low-cost help from Sunflower reel-type Gang Mowers and Rotary Cutters. It will pay you to get full details and low prices on these widely-used, money-saving implements.

Cuts Grass Weeds Stubble Brush

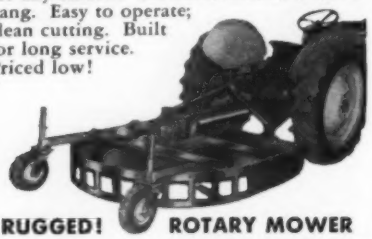
KUB-KLIPPER (Patented) For FARMALL CUB

Made especially for use with Farmall Cub and Lo-Boy, Massey-Harris Pony and Allis-Chalmers "G." Cuts grass and weeds fast, clean—46 in. swath. Hydraulic control. A great work-and-money saver.

5-GANG MOWER

10-FOOT HEAVY DUTY

A rugged 10-ft. patented Gang Mower for mounting to 3-point hitch—also available as trailer unit with telescopic tongue for any tractor. Six other models 3 and 5 gang. Easy to operate; clean cutting. Built for long service. Priced low!



RUGGED! ROTARY MOWER

Both drag-type and tractor-mounted models for all tractors. Powerful, fast-cutting; great for clearing weeds and small brush. Heavy Duty gear box is standard equipment.

WRITE, WIRE or CALL—Get facts and prices on SUNFLOWER Modern Mowing Equipment . . . models to suit your particular requirements.

SUNFLOWER INDUSTRIES, INC.

103 South Kansas Ave. OLATHE, KANS.

Purchasing News

New, Self-Propelled Rotary Mower

It's fast and easy to maintain parks, lawns, cemeteries and golf courses when you use the new, self-propelled "Cyclo-Mo" rotary mower. The machine cuts a 21-inch swath, and features rear-wheel drive with "Klipper" differential action. It is powered by a 2¾-hp, 4-cycle engine with V-belt drive and special power take-off.

In addition to a side trimmer, the new "Cyclo-Mo" is constructed with offset wheels which eliminate all scalping. It features a positive height adjustment from 1½ to 3 inches, and new front chute ejection.

Further details on the self-propelled rotary mower are available from COOPER MFG. CO., MARSHALLTOWN, IA. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 964.

New, self-propelled "Cyclo-Mo" rotary mower cuts a 21-inch swath quickly.

Facilitates Filing of City Planning Maps

Now you can file large drawings, such as maps of city plants and sewage and water systems, quickly and easily with

PARCOA provides...

A NEW CONCEPT FOR OFF-STREET PARKING

AUTOMATIC PARKING features...

- ★ **FLEXIBILITY OF CONTROLS**—Choice of exclusive coded "card-keys", coins, tokens or any combination.
- ★ **NO ATTENDANTS NEEDED**—Pays for itself.
- ★ **SIMPLICITY OF OPERATION**
- ★ **MINIMUM MAINTENANCE**
- ★ **LOW INITIAL INVESTMENT**
- ★ **SAFETY . . . DEPENDABILITY**

Write for descriptive literature.

PARCOA

Division of Johnson Fare Box Company

4619 N. Ravenswood Ave., Chicago 40, Ill.
Phone LOngbeach 1-0217
Sales and Service Offices in Major Cities listed under BOWSER, Inc.

Traverse City Iron Works

Traverse City, Michigan

Manufacturers

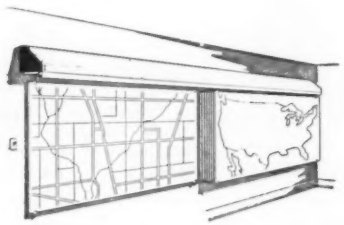
Fire Hydrants and Valves

A.W.W.A. Specifications for Municipal and Industrial Work Factory Mutual and Underwriters Approved for Automatic Sprinkler Installations.

- Mechanical Joint Fittings
- Bell and Spigot Fittings
- Flanged Fittings
- Special Fittings
- Fabricated Pipe for Pumping Station and Sewage Treatment Plants

the new Roll-A-Way filing system. The system utilizes a long rack with a number of parallel tracks from which the maps are suspended. To get a full view of any map, you simply roll it away from its filing place to the other end of the rack.

Standard racks come in various sizes and have eight tracks. Racks can also



be built to accommodate any number of tracks, which are spaced at least 1-inch apart to provide ample room for the individual map. The racks are either attached to the wall, or mounted on a caster-equipped standard. The wall model is fluorescent lighted.

Full details on Roll-A-Way filing systems may be obtained from ROLL-A-WAY FILING SYSTEMS CO., 4845 BELLEVUE AVE., DETROIT 7, MICH. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 936.

Protecting the Ballot

Protect your communities' ballots by an endorsement, advises S. RALPH CROSS & SONS, INC., 120 MAYFIELD ST., WORCESTER 2, MASS. You can secure this endorsement on the ballot quickly and efficiently with a Perfection balloting machine. Here is how it operates:

As a ballot is deposited by a voter, the official in charge of the machine turns the crank and the ballot is fed through a simple but efficient mechanism into the bottom of the ballot receptacle. In passing through the mechanism each ballot is endorsed or printed throughout its entire length with the name of the voting district. Should the voter deposit more than one ballot, only the upper ballot will receive the legal endorsement.

When a ballot has been endorsed, it is automatically counted, but no number

Cleans Parking Meters!

ZENITH

INSTRO-MET

The Only Cleaning Machine designed specifically for Parking Meters!

Complete with two gallons Cleaning Solution and three gallons Rinsing Solution Only $297.50 F.O.B., N.Y.C.

NOTE: For best results use Zenith Laboratory-Tested INSTRO-MET Cleaning and Rinsing Solutions!

Non-Toxic! - Non-Spotting! Non-Explosive!

$1.75 each per Gallon F.O.B. N.Y.C.

Order in Case Lots

USED BY MORE THAN 700 CITIES! Endorsed by Leading Meter Manufacturers!

- Cleans — Rinses — Polishes — Dries!
- Eliminates tedious hand work & service calls!
- Giant Basket — 7¼" inside x 3¾" deep!
- Removable small parts partition!
- Metal, non-breakable Tanks—10" diameter 10½" high!

Write for Brochure

Zenith MFG. & CHEMICAL CORP.

82 BEEKMAN STREET • NEW YORK 38, N. Y.

SAVE TIME AND MONEY WITH THIS COIN COUNTER

FAST ACCURATE DEPENDABLE

Your municipality cannot afford to be without an Abbott Coin Counter. This low priced machine will pay for itself in a matter of months with the time saved in the handling of coins. It counts and packages at the rate at 2500 coins per minute. Imagine how much you could save with one.

We offer a wide variety of coin counters with a model priced as low as $135 For the answer to **any** coin handling problem, come to a specialist. Write today for the Abbott money handling equipment catalog.

ABBOTT COIN COUNTER COMPANY

144th Street and Wales Avenue
New York 54, N.Y. - LUdlow 5-1200

BATES GRATES . . .
Open Steel Flooring and Stair Treads for Power Plants

for maximum strength, for maximum safety, for maximum cleanliness

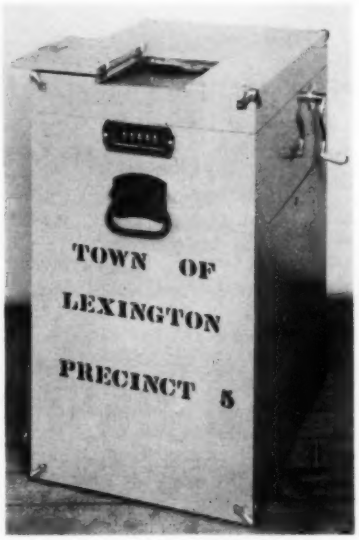
"Tops!!" say municipal officials from coast to coast. "You can't beat them for strength and freedom from slipperiness. And they're so easy to keep clean of grease and water drippings." Wherever you need open steel flooring, be sure to specify BATES GRATES. WHY? Main bars do not vary much in the different makes of open steel flooring, but BATES' exclusive *Hex crossbars* of hot rolled steel fillet-welded to the main bars provide that extra margin of strength and safety.

WRITE FOR BOOKLET

WALTER BATES CO., INC.
Joliet, Illinois

Purchasing News

goes on the ballot. The counting is done by a register which is visible to



all at the end of the voting case. At the close of the polls, the register will agree with the number of endorsed ballots within the voting case, as well as the number of voters checked off on the voting list.

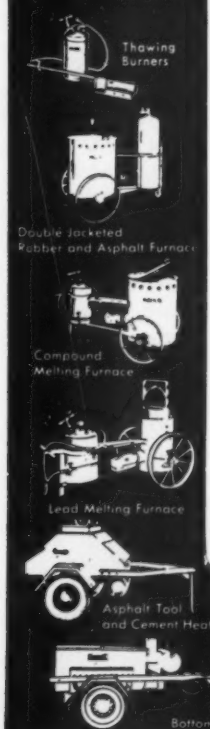
A detailed description of the Perfection ballot machine is available directly from the manufacturer, or you may use the Post Card on the insert following Page 34. Circle No. 962.

Small-Size Roller for Sidewalks, Parking Lots

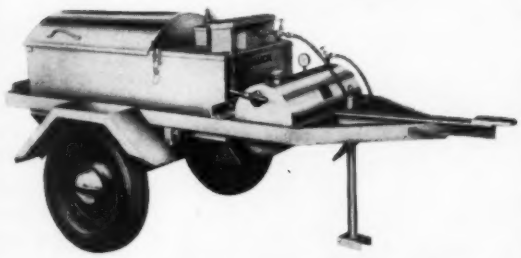
Pfahler Manufacturing Co. has designed a new small-size roller for use on sidewalks, parking lots, driveways, and public golf courses. The improved Ken-Roll has a close tolerance of ½-inch clearance on the right-hand side, facilitating rolling close to walls and posts. It is available with a sturdy trailer unit for quick transportation from job to job.

The close-rolling Ken-Roll has single lever control with constant mesh transmission, a 93-gallon sprinkler tank, and sprinkler mats on each roll. It weighs 1,800 pounds when empty; 4,000 pounds

HAUCK EQUIPMENT



Always Faster • Safer • Easier Melting of Tar • Asphalt



SPEED-MASTER KETTLES

New Advanced Design

Hauck fire box steel firing tube and heavy duty heating tube system. • Improved chassis frame for faster, easier mobility. • Faster melting and draw-off of material. • Comfort, convenience, cleaning and protection features. Sizes—55, 80, 115, 165,230 and 330 gallon capacities. Burn kerosene or bottled gas.

HAUCK MANUFACTURING CO.
111-121 Tenth St. Brooklyn 15, N. Y.

Write for Catalogs

LEADITE

The Pioneer Self-Caulking Material for C.I. Pipe

TABLE OF COMPARATIVE QUANTITIES

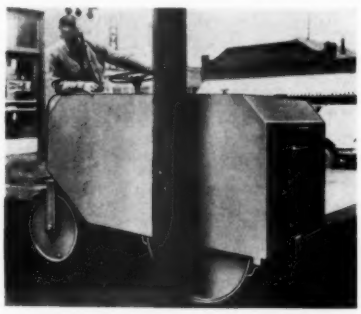
Nominal Inside dia. of pipe, in.	Depth of joint, inches of Leadite	Approx. lbs. of Leadite per joint	Depth of joint, inches of lead	Approx. lbs. of lead per joint
4	2.5	2.00	2.25	8.56
6	2.5	3.00	2.25	11.71
8	2.5	4.00	2.25	14.63
10	2.5	5.00	2.25	17.70
12	2.5	6.00	2.25	20.86
14	2.5	7.00	2.25	24.02
16	2.5	8.25	2.25	33.07
18	2.5	9.25	2.25	36.88
20	2.5	10.50	2.25	40.71
24	2.5	13.00	2.50	53.02
30	2.75	16.00	2.50	65.36
36	2.75	19.00	2.50	77.96
48	3.50	30.00	3.00	121.15
54	4.0	38.00	3.00	135.60
60	4.0	42.00	3.00	150.70

THE LEADITE COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.

No Caulking

with water ballast; and 6,000 pounds when equipped with water and steel ballast.

Get full details on the Ken-Roll from



the PFAHLER MFG. CO., GALION, OHIO. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 935.

New Caterpillar Parts Department

The formation of a Parts Department in Denver, Colo., is announced by M. T. Deames, manager of Parts General Office, Caterpillar Tractor Co., Peoria, Ill. The new department will supply Caterpillar dealers in the Rocky Mountain and Pacific Coast region with their normal parts inventory requirements. The firm's parts depot in Denver will continue to handle dealers' emergency orders.

Paul H. Bringer will manage the new Parts Department, heading between 300 and 400 employees. Mr. Bringer has served as assistant manager of the Peoria Parts Department since 1953. He has 26 years of experience with the company.

Wheeler Reflector Celebrates 75th Anniversary

"Lighting the way to brighter tomorrows," is the theme of the 75th anniversary celebration of the Wheeler Reflector Co., 275 Congress St., Boston, Mass. According to John H. Lamothe, executive vice-president and general manager of the firm, the 75 years "encompass the birth, development and achievement of modern industrial and street lighting as we know it today." Wheeler Reflector is one of the country's leading manufacturers of fluorescent and incandescent lighting equipment and street lighting fixtures.

STEWART

Specialists

Sewer and pipe cleaning equipment

- SEWER RODS
- SECTIONAL STEEL RODS
- COMPLETE SEWER CLEANING MACHINES
- BRACES AND GUIDES
- BUCKETS, ROOT CUTTERS AND DRAG TOOLS

Save the expenses of experimenting. Consult Stewart for any problem in the SPECIALIZED FIELD of pipe cleaning

SINCE 1901

W. H. STEWART, INC.
P.O. Box 767, Syracuse, New York

This Jaeger pumps all the water a 2" hose can handle Hi-performance Jaeger Model 2PN will actually pump all the water that can be pulled through a 2" suction line under average working conditions. Delivers 10,000 gph when operating at only 2400 to 2550 rpm (as much as 400 rpm below the speeds of similar ordinary pumps). Weighs only 160 lbs. on base, 190 lbs. on pneumatics. For complete information on this model or other Jaeger pumps, see your Jaeger distributor or send for Catalog P-4.

Other sizes 1½" to 10"

THE JAEGER MACHINE COMPANY 505 Dublin Avenue Columbus 16, Ohio

LOADERS • COMPRESSORS • MIXERS • PAVING MACHINES

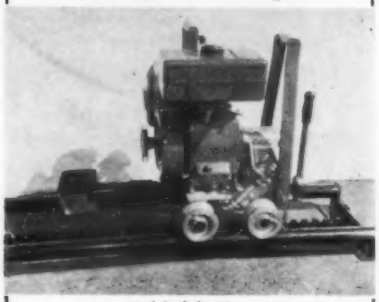
The Bernard *Pressure* Pilot Control for water supply systems

Designed to operate pump motor controllers on single or multiple pump systems, according to the pressure demands, and to assure correct start and stop operation of pump motors without interference of water system surges. The Pilot Control also operates selective sequence control of pump motors according to the anticipated demand.

Write for further information

ERNEST BERNARD ELECTRIC CO.
10335 S. Morgan St.
Chicago 43, Illinois

Your Most Economical Way to Install Underground Pipe!



Model 40

Earthworm Boring Machines install underground lines without breaking surface ground.

Bore up to a 1000 ft. of underground line per gal. of gasoline. Use pipe or conduit as drill stem sections and leave as permanent installations. Bore up to 5" in dia. (reams to 10") and 150 ft. in length.

Write today for illustrated booklet.

LUBE JACK COMPANY
1415 — 14th St. (PO Box 1100) Santa Monica, Calif.

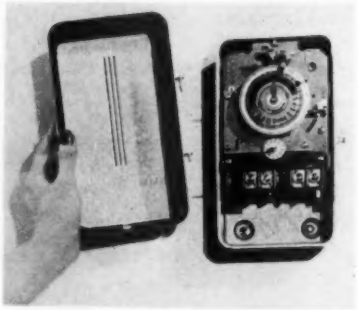
Purchasing News

Low-Cost Time Switch for Water and Sewage Plants

A new general-purpose time switch, the heavy-duty TSA-40, is announced by the GENERAL ELECTRIC CO., INSTRUMENT DEPARTMENT, SCHENECTADY 5, N. Y. The switch replaces the G-E T-27, and is said to offer greater reliability at less cost than its predecessor.

Suitable for both indoor and outdoor use, the TSA-40 will turn electric circuits on or off at any time of day. It can be used to control all types of street, sign and flood lighting, capacitor switches, heating, air-conditioning and refrigeration equipment, irrigation and pump devices, and other types of apparatus where precise time control is necessary.

The new time switch has a 4-watt motor with a permanent silicone-grease lubricant sealed in for long life and improved efficiency in a wide temperature range. The new Telechron motor has positive operation from —50F to +150F, making the timer adaptable for unlimited use under almost any climatic conditions. The motor's sealed-in lubricant makes it possible to stock the switch for extended periods without danger of the motor becoming inoperative.



The switch is furnished with either a plain dial for fixed time setting, or an astronomic dial for dusk and dawn schedules. It may be set to any time of the day with the minute-set dial, and maintains a time schedule as accurate as an electric clock. One or more days may be skipped during a week of operation with the use of an ommitting device.

The TSA-40 switch is fully described in literature from the General Electric Co. Write directly, or you may use the Post Card on the insert following Page 34. Circle No. 967.

Connelly **IRON SPONGE**

DO YOU USE YOUR DIGESTER GAS?

Raw sewer gas contains Hydrogen Sulphide which corrodes engines and other equipment. The protection of such equipment is of paramount importance. In hundreds of plants throughout the country, Connelly Iron Sponge has not only eliminated this costly sulphur damage, but has materially improved purification and lowered operating and maintenance costs.

Connelly Iron Sponge is a product of extra high capacity and exceptional activity. Its cost per 1000 feet of gas is exceptionally low and it can be depended upon for unusually long life and remarkably revivifying properties.

CONNELLY ENGINEERING SERVICE

Connelly Engineers, backed by more than 70 years of experience in gas purification work, are at your service. We will gladly make a thorough analysis of your problems and submit unbiased recommendations without obligation.

CONSULT CONNELLY—TODAY

CONNELLY, *Inc.* **3170 S. California Ave., Chicago 8, Ill. Elizabeth, N. J.**

Consulting Engineering Firm for Sale

Owner desires retirement and offers complete organization and practice for sale, including the following:

1. An established civil engineering and surveying practice of more than ten years.
2. A going concern of engineers, surveyors and draftsmen.
3. Air-conditioned offices and drafting room complete with furniture, supplies and equipment.
4. Surveying instruments, survey station wagons, including supplies and equipment.
5. Catalogue file.
6. All tracings, standard drawings and map files, including extensive survey coverage of area served.
7. All aerial photography, photogrammetry, etc.

Owner will sell complete organization as listed for the amount that the business earned in net profit last year. The firm is located in a large and growing southeastern city. The amount of work performed can be greatly expanded if new owner so desires.

Write Box No. 407
THE AMERICAN CITY
470 Fourth Ave., New York 16, N. Y.

Purchasing

New Concrete Saw

Use this new Eveready concrete saw for production sawing on municipal airfield installations, super highways and turnpikes. The Model E-36 PD is equipped with a 36-hp, 4-cylinder, air-cooled engine that drives the saw under full load at speeds up to 25 feet a minute. Two abrasive coated drive wheels, in direct contact with rubber tires, provide positive traction under all kinds of operating conditions. This rear wheel drive eliminates slipping, sliding, bumping or twisting the blade, enabling the saw to move forward smoothly.

"Powr-Drive," the company's self-propelling unit, is quickly engaged or disengaged by foot pedals within easy reach of the operator. Cutting speed is easily set by turning the control lever on the variable speed transmission.

The new "Tip-N-Turn" feature of the E-36 PD permits instant maneuvering. The saw is merely tipped and then turned in much the same manner as a wheelbarrow is turned. Another feature of the Eveready model is "Hydra-Eze" depth control. This engine-driven hydraulic mechanism feeds the blade smoothly into the material. Hydraulic power also lifts the blade out of the cut, without bumping, twisting or binding.

The dual blade shaft on the Model E-36 PD permits right or left side cutting. No extra parts are needed. The hinged blade guard, water hose, and guide mark assemblies are interchangeable.

New, illustrated literature is available describing Eveready's "Powr-Drive" concrete saws and a full line of Eveready Diamond and reinforced abrasive blades. For complete information, write EVEREADY BRIKSAW, DEPT. 313, 1509 S. MICHIGAN BLVD., CHICAGO 5, ILL., or you may use the Post Card on the insert following Page 34. Circle No. 966.

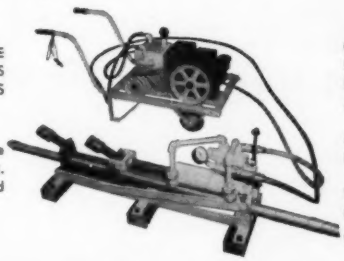
NEW—Giant Hydraulic Pipe Pushers—TWO SIZES

MODEL PH-2

CAPACITY ½" TO 1¼" PIPE
FRAME LENGTH 41 INCHES
FRAME WIDTH 13 INCHES
APPROX. WT. 150 LBS.

A Simple Push or Pull of the Valve Puts Machine to Work. Eliminates All the Hard Work.

WRITE FOR PRICES



MODEL PH-3

CAPACITY ¾" TO 2" PIPE
FRAME LENGTH 47 INCHES
FRAME WIDTH 15 INCHES
APPROX. WT. 190 LBS.

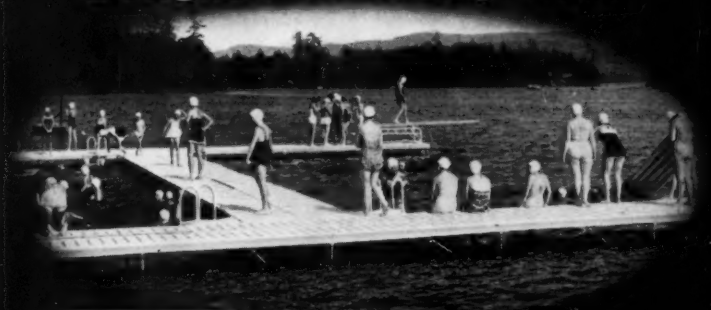
Install Over 100 Ft. of Two Inch Pipe Per Hour.

Tested Under Operating Conditions.

WRITE FOR PARTICULARS.

GIANT MANUFACTURING CO. Council Bluffs, Iowa

HERE'S MORE BEAUTY . . . MORE VALUE
Designed for Safety First!



Standard STEEL PIER

The "World's safest pier" provides a non-skid, rust-resistant, cool deck surface that lasts a lifetime. Sturdy, steady, strong, easy to set up, take down and store. Available in any size, shape or combination. Complete accessories include: benches, ladders, diving platforms, lifeguard towers, steps, signal lights, mooring arms — all designed for quick, easy installation.

MODERNIZE your lake front with a STANDARD STEEL PIER. Write for details — or send us a rough sketch for free recommendations and prices

Standard Steel PRODUCTS MFG. CO.

America's Leading Producer of Modern Waterfront Equipment Dept. A, 2836 S. 16th St. Milwaukee 15, Wisconsin

MINIATURE TRAINS
INCREASE REVENUE AND RECREATIONAL FACILITIES

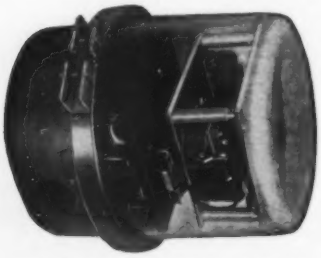
Passenger-carrying MT Miniature Trains attract family crowds to public recreation centers in city parks and municipal areas—and provide their localities with an important source of additional income.

5 GREAT MODELS TO CHOOSE FROM
Just Right for Your City
in SIZE . . . in VERSATILITY . . . in PRICE

FOR COMPLETE DETAILS, WRITE DIRECT TO: DEPT. AC

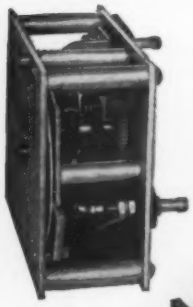
MINIATURE TRAIN CO. Rensselaer, Indiana

TIME-O-MATIC FLASHERS JACK MOUNTED

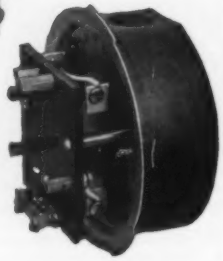


Time-O-Matic Jack Mounted Flasher in Standard Meter Case

Single or two circuits, every model with built-in eliminators. Available with standard meter case (above) or separately with Jack mounting panel (below).



Time-O-Matic Jack Mounted Flasher Only



Time-O-Matic Jack Panel in Meter Case

SPECIFY DEPENDABLE TIME-O-MATIC

↓

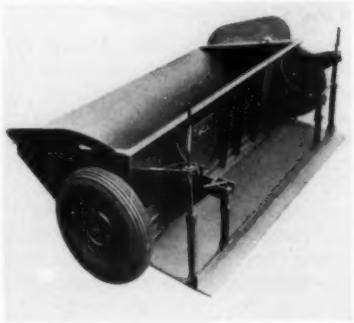
"A Sign of Good Control"

•

TIME-O-MATIC CO.
1108 Bahls Street
Danville, Illinois

Purchasing News

Speeds Small Asphalt Paving Jobs



Now you can handle all of the small asphalt paving jobs in your community quickly and economically with the new True-Lay Paver-Spreader. This machine, reports L. W. Glaser, sales manager of Littleford Bros., Inc., gives compaction up to 80% of large self-propelled pavers with mechanical tampers. It features pneumatic balancing wheels, a chain-hitch attachment, and a 16-inch hopper throat.

A patented balancing beam, compaction chamber, and adjustable hinged screed permit about 75% of the unit's weight, plus the weight of the material, to be placed on the screed. This weight of some three tons, brought to bear directly on the compaction chamber and screed, produces a smooth, compact mat.

The True-Lay Paver-Spreader lays up to 100 tons of material per hour in a smooth, even, level mat from four to eight feet wide, and up to six inches deep. A special attachment increases the mat size to 10 feet. An agitator model, with independent gasoline engine drive, is recommended for laying a mat 10 feet wide.

The chain-hitch arrangement of the True-Lay eliminates truck sway. Chains fastened to the front of the machine are crossed and simply attached to the truck's front bumper. Using this arrangement, any shock encounter by the truck is not transmitted to the Paver-Spreader.

Additional data on the True-Lay may be obtained from LITTLEFORD BROS., INC., 500 E. PEARL ST., CINCINNATI 2, OHIO. For *Bulletin No. GG-33*, write the company directly, or you may use the Post Card on the insert following Page 34. Circle No. 965.

NOTICE TO BIDDERS

ELEVATED STEEL WATER TOWER

Sealed bids for the sale of one 30,000 gallon elevated steel water tower, located approximately one mile North of the main Campus at the site of the old Feeding and Breeding Station of the A & M College of Texas, will be received at the Office of Physical Plant, Room 11, System Administration Building, College Station, Texas, until 2:00 P.M. Thursday, May 17, 1956, and then publicly opened and read. Sale will be for cash to the highest bidder. Information and Proposal Forms may be obtained from the Office of Physical Plant. The College reserves the right to waive any technicalities and to reject any or all bids.

BIRD DAMAGE IS COSTLY

ECONOMICAL SAFE

Bur-Co Bird Repellent does not harm birds. They instinctively dislike Bur-Co. No chemical reaction on building material. Does not harm humans internally or externally. Each application properly applied eliminates birds for at least one year. Write Dept. 11 for prices and additional information.

POSITIVE HUMANE

BURR CHEMICAL CO.
3329 Auburn Rockford, Ill.

About People

The death of Lowell E. Northrop, secretary of the California Water Association, is announced by the **Neptune Meter Co.**, of New York City. Mr. Northrop had been with Neptune 42 years prior to his retirement in 1953. Active in many professional and technical societies, he was known as "Mr. Water Meter" on the West Coast. Further news from the Neptune Meter Co. informs us of the appointment of John W. Barrington as sales representative in Northern Illinois and Northern Indiana. Mr. Barrington is a former member of the meter department, Department of Water, Valparaiso, Ind.

The states of Arkansas, Alabama, Louisiana and Mississippi, and the western part of Tennessee will be included in the territory of Hunter O. Wagner, Sr. when he takes over as new district sales manager for the **Four Wheel Drive Auto Co.**, Clintonville, Wis. Another new district sales manager, Douglas E. Reed, will have charge of the South Texas sales of FWD 4- and 6-wheel-drive trucks.

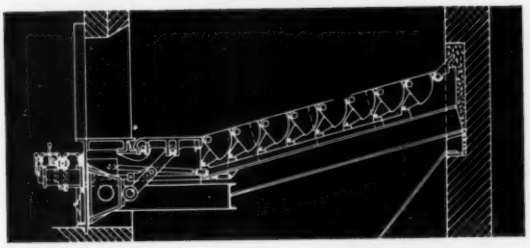
The assignment of Richard L. Spetka to the New York Domestic Office of **The Cooper-Bessemer Corp.**, Mount Vernon, Ohio, is announced by Robert F. Lay, vice-president and general sales manager. Mr. Spetka will assist in the engineering and sale of compressors and engines.

Edward W. Kilpatrick has joined the staff of **Boswell Engineering Co.**, Ridgefield Park, N. J., as consulting engineer, according to a recent announcement. Mr. Kilpatrick is a former New Jersey State Highway Engineer.

Succeeding Horace B. Horton as president of the **Chicago Bridge & Iron Co.**, 332 S. Michigan Ave., Chicago 4, Ill., is Ernest E. Michaels, formerly executive vice-president of the firm. Mr. Horton has been elected chairman of the board. Also elected to new positions in the company were Charles S. Pillsbury, now vice-president and secretary; Arthur B. Horton, vice-president and treasurer; and George E. Borst, vice-president.

E. A. Drott, 69, died suddenly on April 5th at Raleigh, N. C. Mr. Drott was delivering a talk before a group

4 REASONS FOR SUPERIORITY OF
AE INCINERATORS



FOR TOP PERFORMANCE in burning industrial refuse, a leading industrial plant has recently purchased two AE incinerator stokers, each 16' wide x 11'-6" deep. Special features which led to the choice of these units are:

(1) Large dump plates assure reliable and free discharge of burned material to ash hoppers.

(2) Hydraulically-operated grates and dump plates designed by the specialists whose hydraulically-operated steering gears guide vessels on the seven seas, and whose hydraulically-driven stokers are operating in the U. S., Britain, Holland, France, Australia, India and Indonesia.

(3) Grates designed by engineers who made famous the Taylor, Perfect Spread and Vibra-Grate stokers.

(4) Special design prevents damage or service interruption.

For municipalities and industrial plants AE's engineering know-how assures maximum capacity for any given size of stoker and unsurpassed burning performance.

AMERICAN ENGINEERING COMPANY
DEPT. S-108, WHEATSHEAF LANE & SEPVIVA ST., PHILADELPHIA 37, PA.
Canadian Subsidiaries: Affiliated Engineering Corporations, Ltd., Montreal, P. Q. . . . Bawden Industries Ltd., Toronto, Ont.

M & M BRUSH CHIPPERS
convert 3000 lbs. tree trimmings into small chips in 1 hour

A portable, highly efficient unit with its own power plant, the M & M Brush Chipper converts a truckload of useless brush into a small pile of chips in 21 minutes. The chips make excellent fuel, and can also be used for livestock bedding or mulch. The M & M Brush Grinder will handle branches (green or dry) up to six inches in diameter, and will deposit them in a truck or container or in a neat pile on the ground. The M & M Brush Grinder has a standard trailer hitch for towing behind car, jeep, or truck, and a retractable wheeled jack for levelling when detached from towing vehicle. Moving parts are fully enclosed for safety, and the whole unit is ruggedly constructed for long, hard service. Write today for illustrated folder.

MITTS & MERRILL 1003 South Water Street • SAGINAW, MICHIGAN
94

of International Harvester Co. distributors when he collapsed and died almost immediately. He was president of **Drott Mfg. Corp.,** and chairman of the board of **Drott Tractor Co.**

L. B. McKnight

In addition to his duties as a director and president of the Chain-Belt Co., Milwaukee, Wis., L. B. McKnight has been elected a director of **The Heil Co.,** 3043 W. Montana St., Milwaukee. Serving on the Heil board with Mr. McKnight are Joseph F. Heil, president; W. M. Chester, H. S. Falk, H. F. Falk, and Frederic Sammond. The Heil Co. has also appointed a new manager of advertising and market research. He is Kenneth C. Sanders, formerly manager of sales planning for the company.

Arthur W. Bollard, formerly vice-president and secretary of the F. D. Cummer & Son Co., has joined the **Colonial Iron Works Co.,** 17625 St. Clair Ave., Cleveland 10, Ohio. He will serve as general manager of the firm's newly-created Bollard Asphalt Plant Division.

A recent meeting of the board of directors of **Lock Joint Pipe Co.,** 150 Rutledge Ave., East Orange, N. J., resulted in the election of Philip R. Hirsh as executive vice-president. Mr. Hirsh is former vice-president in charge of concrete pipe sales for the company.

William Gaddis

After nine years with the **Highway Equipment Co., Inc.,** 616 D Ave. NW., Cedar Rapids, Iowa, William Gaddis has been named vice-president and assistant general manager, succeeding his brother, Roy Gaddis, Jr. The former vice-president resigned recently to form his own company. The Highway Equipment Co. manufactures a complete line of ice control, bituminous concrete, and aggregate spreaders.

New assistant to the general manager of the **Ward LaFrance Truck Corp.,** Elmira, N. Y., is John Dando, former representative for Ward LaFrance equipment in southern New York and northern Pennsylvania. Mr. Dando has been with the Elmira firm since 1946.

A new assistant sales manager, Mark Anthony, is announced by the **H. S. Watson Co.,** 1316 67th St., Emeryville 8, Calif. A former member of the Anthony Co., Streator, Ill., Mr. Anthony has a broad background in truck equipment merchandising. He will help the Watson firm expand into new motor truck equipment lines.

Carl H. Ingwer, president of **The Ridge Tool Co.,** Elyria, Ohio, announces the appointment of William L. Parcell as vice-president. Mr. Parcell, former sales manager, celebrates his 20th anniversary with the company next month. He will continue as director of sales.

Dr. Malcolm S. McIlroy, professor of electrical engineering at Cornell University, died recently in Tompkins County Memorial Hospital, Ithaca. He was 53 years old. Dr. McIlroy was widely known in the Water and Gas Industry for his development of a Fluid Network Analyzer used in the study of pipeline systems which distribute gas, water or air. In 1949 he was awarded the John M. Goodele prize of the AWWA for his significant achievement.

One of the foremost authorities and designers in the field of uniform fabrics, Philip Henderson, will manage the uniform fabrics division of **Metcalf Brothers,** 2 East 34th St., New York, N. Y.

A. William Fraser and Clarence S. Wentworth have been appointed commercial vice-presidents of the **Worthington Corp.,** Harrison, N. J., according to Edwin J. Schwanhausser, president. Mr. Fraser is Worthington's Midwest Regional Sales Manager, and Mr. Wentworth manages the company's sales in the Central Region. New district manager of Worthington's Seattle office is Charles D. Cummins.

CIVIL ENGINEER

Excellent Opportunity in Southern California in Private Business

One of our engineers is retiring on pension after 20 years' service.

The man who will replace him should have a general design and construction experience in the development of

General Survey,
Earthmoving,
Sewerage,
Drainage,
Water Supply,
Street and miscellaneous small to medium concrete and steel construction projects.

Age 30 to 50, family man, Civil Engineering Degree and registered professionally. Good salary and employee benefits with permanent future.

Send experience resume to:

P. O. BOX 1151

GLENDALE, CALIFORNIA

L. A. Weom

T. E. Woodruff, manager of the Pump Sales Division of **Fairbanks, Morse & Co.,** died recently, after a 44-year association with the company. He is succeeded by L. A. Weom, former manager of Materials and Schedules at the company's Beloit (Wis.) Works. Headquarters of the Pump Sales Division are located in Kansas City, Kans. Other F-M appointments include J. R. Walsh, new manager of Materials and Schedules at the Beloit Works; G. R. Anderson, manager of the Kansas City Works; A. H. Hoffman, manager of the company's Electrical Works at Freeport, Ill.; and V. E. Johnson, manager of F-M's Westco Works in St. Louis, Mo. The company also announces the appointment of J. S. Peterson as manager of electronic sales in the firm's Scale Division. Main offices of Fairbanks, Morse & Co. are at 600 S. Michigan Ave., Chicago, Ill.

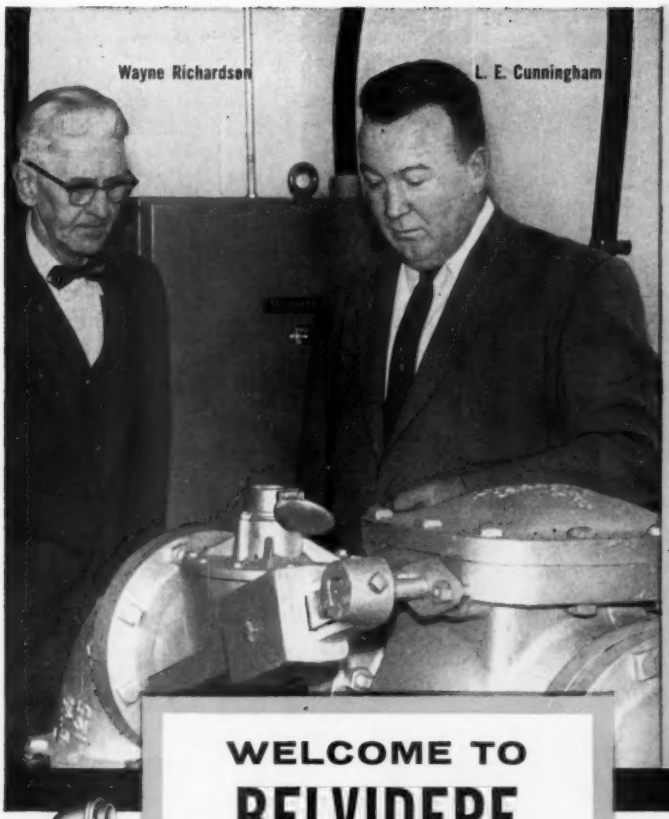
Two new sales representatives are announced by the **Fisher-Pierce Co., Inc.,** 94 Pearl St., S. Braintree, Boston 85, Mass. H. Walter Lent will represent the company in Maryland, Virginia and the District of Columbia, and Lyman Winn will handle F-P sales in major portions of Tennessee, Kentucky, Alabama, Mississippi and Arkansas.

From the **Lakeside Engineering Corp.,** 222 W. Adams St., Chicago 6, Ill., we learn of the recent death of Willis L. Ogden, vice-president of the firm. He was 33 years old. Mr. Ogden had been connected with the water and sewage treating equipment firm for the past three years.

Two new sales managers have been appointed by the **Gardner-Denver Co.,** Gardner and Front Sts., Quincy, Ill. William B. Knoderer will manage sales for the company's Industrial Division, and Niel Martin Fishback for the firm's Mining and Contracting Division.

H. Worthington

Edwin Malzahn, general manager of **The Charles Machine Works,** 625-30 Birch St., Perry, Okla., announces the appointment of Howard Worthington as sales manager. Mr. Worthington is the former manager of the water pump division of the Reda Pump Co.



"Here's why our city installed its sixth BJ Submersible"

Says L. E. Cunningham, Mayor of this progressive midwestern city

WELCOME TO BELVIDERE ILLINOIS

CITY OF INDUSTRIAL ADVANTAGES

Facts about Belvidere, Illinois

A friendly city of 10,000, Belvidere is located 75 miles northwest of Chicago. Its industrial advantages include abundance of water, skilled labor pool, good plant sites, low tax and utility rates, and excellent educational and recreational facilities. It is served by the Chicago and Northwestern Railroad and 26 major truck lines.

Facts about the BJ Submersible

The BJ Submersible operates completely submerged in water at any depth. This sealed, submerged unit needs no pump house and is unaffected by weather extremes, floods or dust. The BJ Submersible requires no field adjustments. Normally gives more than 20 thousand pumping hours before service is required. Silent and vibrationless.

"A dependable, protected water supply system is vital to the future growth of both our residential and industrial areas.

In the past our wells were pumped by surface motor deepwell turbines requiring pump house protection and special maintenance. In 1951 Wayne Richardson, our Waterworks Superintendent, working with R. Anderson, Engineering, replaced an old deepwell turbine with a modern Byron Jackson Submersible.

Our experience with this completely submerged pump was so satisfactory that we converted all our wells to submersible operation, having just completed the installation of the sixth unit. The combined capacity of all these units is now 5 MGD with storage facilities for 1,700,000 gallons.

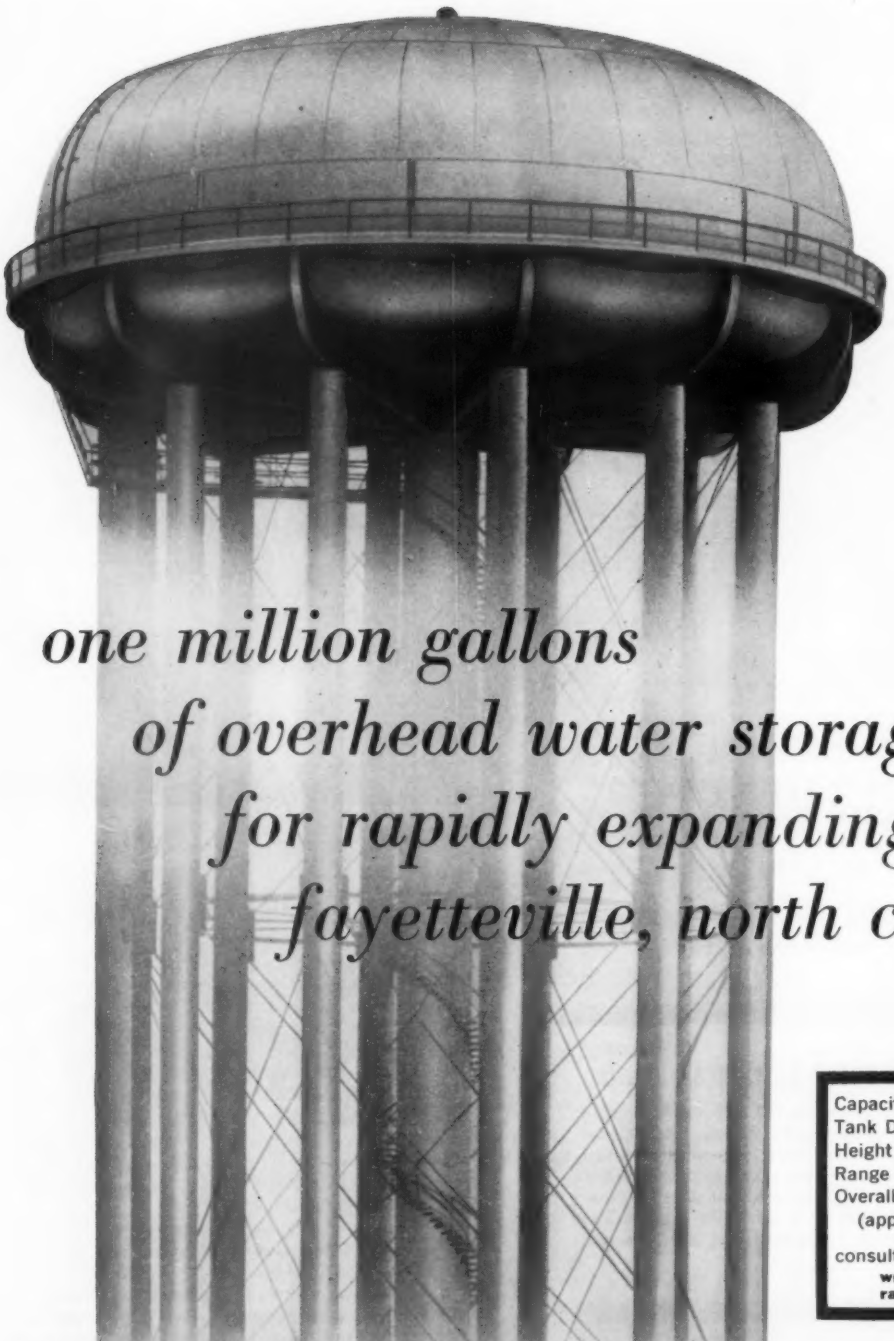
The people of Belvidere are now assured a pure water supply that is completely safe from flood or other disaster conditions. And our people also benefit as taxpayers since routine maintenance is eliminated and no costly, space-consuming surface structures are necessary. Byron Jackson Submersibles have provided us with the answer to all our pumping problems."

SINCE **BJ** 1872

Byron Jackson Pumps, Inc.

A Subsidiary of Borg-Warner Corporation

P. O. BOX 2017A, TERMINAL ANNEX • LOS ANGELES 54, CALIFORNIA



one million gallons of overhead water storage for rapidly expanding fayetteville, north carolina

Capacity	1,000,000 Gal.
Tank Diameter	86 Feet
Height of Columns	111 Feet
Range of Head	25 Feet
Overall Height (approx.)	146 Feet

consulting engineer
wm. c. olsen & assoc.
raleigh, north carolina

Catalog H_2O details and describes all **HAMMOND** Water Storage and Processing Vessels . . . Write for your copy.

HAMMOND IRON WORKS

WARREN and BRISTOL, PA. • PROVO, UTAH • CASPER, WYO. • BIRMINGHAM, ALA.

sales offices

The American City

Professional Service Directory

STANLEY ABEL
Public Administration Consultant
376 West Sixth Street
Perris California

ALBRIGHT & FRIEL, INC.
Consulting Engineers
Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators & Power Plants, Industrial Building. City Planning, Laboratory, Reports, Valuations.
3 Penn Center Plaza, Philadelphia 2

ALLEN & HOSHALL
Consulting Engineers
Mechanical—Civil—Electrical
Municipal Improvements
65 McCall Place
MEMPHIS, TENNESSEE

ALVORD BURDICK & HOWSON
ENGINEERS
Water Works — Sewage Disposal
Water Purification — Drainage
Flood Relief — Appraisals
Sewerage — Power Generation
20 North Wacker Drive, Chicago 6, Ill.

MYRON C. ANDERSON
Consulting Engineer
Consultant
Swimming Pools
Recreation and Park Areas
Design — Renovation
Maintenance — Site Planning
Surveys — Equipment Selection
5403 Kirby Drive Houston 5, Texas

E. T. ARCHER & CO.
Consulting Engineers
Organized 1907
Reports — Designs — Supervision
Water Works — Sewerage Treatment
Power Systems
Railway Exchange Bldg.
Kansas City 6, Mo.

JOHN J. BAFFA
Consulting Engineer
Drainage — Swimming Pools
Sewerage — Water Supply & Treatment
Sewage Treatment — Industrial Wastes
Refuse Disposal — Rate Studies
75 West St. New York 6, N. Y.

SCOTT BAGBY and ROBERT CATLIN
Modern Comprehensive City and Area Planning and Development
"Plans Which Can Be Carried Out"
11 Bloomfield Ave. Denville, N. J.
1500 Margaret S. E., Grand Rapids, Mich.

Abrams Aerial Survey Corporation
Over one-third century of Experience
606 E. SHIAWASSEE STREET
Complete facilities for all aerial photography, processing, photogrammetric drafting and reproduction.
Planimetric, topographic maps and profiles. Large scale atlas sheets. Infra-red for forestry analysis.
LANSING 1, MICHIGAN

EXPERIENCE COUNTS: Dependable Photo Maps, Topographic Maps, Tax Maps
AERO SERVICE CORPORATION
Oldest Flying Corporation in the World • Founded 1919
HEADQUARTERS: 210 E. Courtland St., PHILADELPHIA 20. OFFICES: 1401 S. Detroit St., TULSA; 120 N. Fourth Ave., DULUTH; 34 Richard St., SALT LAKE CITY 10; 68 Post St., SAN FRANCISCO

AIR SURVEY CORPORATION
Photogrammetric Engineering
1101 LEE HIGHWAY, ARLINGTON 9, VIRGINIA
Precise Topographic and Planimetric Maps
Tax Maps and Atlas Sheets
Controlled Photo Maps
Route and Location Surveys
Field Surveys
Aerial Photography

ALSTER & ASSOCIATES, INC.
AERIAL SURVEYS
TOPOGRAPHIC • PLANIMETRIC • MOSAIC MAPS
AERIAL MAPPING CUTS SURVEY COSTS
write for free brochure on mapping and aerial photography
6135 KANSAS AVE., N.E., WASHINGTON 11, D. C., Phone TAylor 9-1167

Topographic Maps
Air Photography
Tax Maps
Photographic Mosaics
Surveys
FOR: Cities, Counties, States, Consulting Engineers, etc.

Jack Ammann
PHOTOGRAMMETRIC ENGINEERS, INC
BROADWAY AT TENTH
SAN ANTONIO 5, TEXAS • CA. 6-5167

BRANCH OFFICES
EASTERN—P. O. Box 411, Manhasset, N.Y.
WESTERN—995 Flower St., Lakewood, Colo.
SE—685 W. Peachtree St. NE Atlanta 5, Georgia
PACIFIC—53 E. Fedora Ave. Fresno, Calif.

Revaluations **Appraisals**
associated surveys
P. O. Box 7003, Asheville, N. C.
30-34 Howe Avenue, Passaic, New Jersey
P. O. Box 231, Cornwall, N. Y.

HARRY BALKE ENGINEERS
CONSULTING ENGINEERS
Consulting Service — Reports, Design, Supervision, Research
Bridges, Buildings, Structures — Toll Roads, Expressways, Highways
2330 VICTORY PARKWAY
CINCINNATI (6) OHIO
332 S. MICHIGAN AVE.
CHICAGO (4) ILLINOIS

GEORGE W. BARTON and ASSOCIATES
Traffic — Parking — Transportation Engineers
415 Church Street Evanston, Illinois
Phone: Greenleaf 5-8646

The American City Professional Service Directory

B & B ENGINEERING CORPORATION

Fire Alarm and Traffic Signal — Engineers and Consultants

P. O. Box 31 — Norwood, La.

Branches: New York, N. Y.—Baton Rouge, La.—St. Louis, Mo.

CHANGED YOUR ADDRESS?

If so, please notify the publishers as we are anxious to have your card correct in this Directory. Thank you.

BLACK & VEATCH

Consulting Engineers

Sewerage, Sewage Disposal, Water Supply, Water Purification, Electric Lighting, Power Plants, Valuations, Special Investigations, and Reports.

4706 Broadway — Kansas City 2, Missouri

BROWN & BLAUVELT

Consulting Engineers

Expressways, Parkways, Highways—Bridges, Dams, Airports
Industrial Plants, Site Planning—Preliminary Reports
Supervision of Construction — Material Controls, Soils and Concrete Testing
Municipal Engineering Services — Tax Maps, Surveying

468 Fourth Ave., New York 16, N. Y. — 140 Eighth St., Pittsburgh, Pa.

BROWN ENGINEERING COMPANY

Consulting Engineers

K. P. Building — Des Moines 9, Iowa

BUCK, SEIFERT AND JOST

Consulting Engineers

Water Supply, Sewage Disposal, Hydraulic Developments, Valuations and Reports.
Chemical and Biological Laboratories.

112 East 19th Street — New York 3, N. Y.

FRANCIS H. BULOT CONSULTING ENGINEERS, INC.

- Water Supply & Purification
- Flood Control & Drainage
- Subdivisions
- Design
- Sewerage & Sewage Treatment
- Bridges & Highways
- City Planning
- Administration
- Refuse Disposal & Incineration
- Airports
- Investigations & Reports
- Finance

Los Angeles 13, 411 West 5th Street — Pasadena 1, California, 1041 East Green Street — Costa Mesa, 116 East Broadway

WILLIAM E. BURGER COMPANY

BRAZIL CHIMNEY DIVISION

CONTRACTORS ENGINEERS

Member

Designers & Builders of Radial Block Chimneys
Integrity — Precision — Service

144 W. 47th St. — Chicago 9, Ill. — BOulevard 8-7709

ARE YOU A CITY OFFICIAL?

You will find this Directory a reliable "WHO'S WHO" of consulting engineers who specialize in municipal work.

MICHAEL BAKER, JR., INC.

The Baker Engineers

Civil Engineers—Planners—Surveyors—Municipal Engineers—Airport Design — Sewage Disposal Systems — Water Works Designs and Operations—Consulting Services—Surveys and Maps

Branch Office—Jackson, Miss.
Home Office—Rochester, Pa.

BARKER & WHEELER

36 State Street	Albany, N. Y.
11 Park Place	New York City 7

Sewage Disposal, Water Supply, Sewerage — Public Utility, Industrial Valuations and Rates, Power

W. I. BARROWS & ASSOCIATES

Consulting Engineers

Mechanical—Civil—Electrical—Hydraulic
Industrial & Municipal Betterment & Improvements

1169 Reibold Bldg., Dayton 2, O.

E. D. BARSTOW

Sanitary Engineer

Water Supply—Water Treatment
Sewerage—Sewage Treatment
Reports—Plans—Construction

163 N. Union St., Akron 4, Ohio

HARLAND BARTHOLOMEW AND ASSOCIATES

City Planners — Civil Engineers
Landscape Architects

Atlanta, Ga. — St. Louis, Mo.
Honolulu, T. H.

THE HARWOOD BEEBE CO.

Municipal and Civil Engineers

Water Supply and Purification, Sewerage and Sewage Treatment, Streets, Light & Power, Airports

171 Pine St.
Spartanburg, S. C.

Beling Engineering Consultants

Designers of
Water and Sewer Systems for Municipalities
Rated in Dun & Bradstreet
MOLINE, ILLINOIS
Peoria Champaign Rockford Burlington

HOWARD K. BELL

Consulting Engineers

G. S. Bell C. G. Gaither J. K. Latham J. W. Finney, Jr., Assoc.

Water Works — Sewerage
Water Purification — Sewage Treatment
Swimming Pools — Refuse Disposal
Industrial Wastes

533 S. Limestone St., Lexington, Ky.

BOGERT AND CHILDS

Consulting Engineers

Clinton L. Bogert — Fred S. Childs
Ivan L. Bogert — Donald M. Ditmars
Robert A. Lincoln — Charles A. Manganaro
William Martin

Water & Sewage Work — Refuse Disposal
Drainage — Flood Control
Highways and Bridges — Airfields

145 East 32nd St., New York 16, N. Y.

The American City Professional Service Directory

LOUIS P. BOOZ
Consulting Engineers
Incineration
Sanitation
Water Treatment
Industrial Wastes
51 E. 42 St., New York 18, N. Y.

FLOYD G. BROWNE AND ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Power and Industrial Plants, Industrial Waste, Laboratory. Reports, Design, Supervision.
123 W. Church St., Marion, Ohio

Bowe, Albertson & Associates
Engineers
Sewage and Water Works
Industrial Wastes—Refuse Disposal—Municipal Projects
Industrial Buildings—Reports
Plans—Specifications
Supervision of Construction and Operation—Valuations
Laboratory Service
75 West St., New York 6, N. Y.

Briley, Wild & Associates
Consulting Engineers
Reports — Supervision
Designs — Appraisals
Consultation
8 N. Wild Olive Avenue
Daytona Beach, Florida

CAMP, DRESSER & McKEE
Consulting Engineers
Water Works, Water Treatment, Sewerage, Sewage Treatment, Municipal, Industrial Wastes, Investigations, Reports, Design, Supervision, Research, Development, Flood Control.
6 Beacon Street — Boston 8, Mass.

Capitol Engineering Corp.
Engineers—Constructors—Management
Water Works, Sewage Disposal, Airports, Dams and Bridges, Roads and Streets, Planning, Design and Surveys.
Dillsburg, Pa.—Rochester, N. Y.
Dallas, Texas

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

THE CHESTER ENGINEERS
Water Supply and Purification
Sewage and Industrial Waste Treatment—Power Plant—Incineration—Gas Systems
Valuations—Rates—Management
Laboratory—City Planning
210 E. Park Way, Pittsburgh 12, Penna.

WILLIAM G. CHRISTY
Consulting Engineer
Air Pollution Control
Combustion — Smoke Control
38 Park Row, New York 38, N. Y.

Philip Burgess
Chester A. Niple
Ben K. Bare
Clayton C. Bull
S. F. Hatch
Raymond Fuller
Tahlman Krumm
R. E. Peters
Robert Wolfe

BURGESS & NIPLE
CIVIL AND SANITARY ENGINEERS
WATER AND SEWAGE CONSULTANTS
2015 WEST FIFTH AVENUE — COLUMBUS 12, OHIO

Design
Construction
Reports
Planning
Valuations
Rates
Supervision
Laboratory

RALPH H. BURKE, INC.
Consulting Engineers
Plans — Construction Supervision — Reports
Complete Architectural and Engineering Services
Expressways — Grade Separations — Municipal Works
Underground Garages — Parking Structures — Traffic Studies
Airports and Air Terminal Buildings — Parks — Field Houses — Shore Protection
20 NORTH WACKER DRIVE — CHICAGO 6, ILLINOIS

BURNS & McDONNELL
ENGINEERS — ARCHITECTS — CONSULTANTS
P. O. Box 7088 — Phone: DElmar 3-4375 — Kansas City, Missouri

THE J. M. CLEMINSHAW COMPANY
"Our 33rd Year"
APPRAISALS—REVALUATIONS
Specializing in the revaluation of Real Estate and Personal Property for local tax equalization purposes. Illustrated brochure on request.
UNION COMMERCE BUILDING, CLEVELAND, OHIO

CHAS. W. COLE & SON
ENGINEERS - ARCHITECTS
MUNICIPAL — INDUSTRIAL — COMMERCIAL
WATER SUPPLY — SEWERAGE — SEWAGE TREATMENT
220 W. LaSalle St. — Phone: 4-0127 — South Bend, Indiana

COLE • LAYER • TRUMBLE COMPANY
REVALUATIONS — CLT — APPRAISALS
11 W. Monument Ave • Dayton 2, Ohio
Municipal and County Tax Revaluations
Descriptive Material upon Request

CONSOER, TOWNSEND & ASSOCIATES
Water Supply, Sewerage, Flood Control and Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas and Electric Transmission Lines.
360 EAST GRAND AVE. — CHICAGO 11, ILLINOIS

COTTON, PIERCE, STREANDER, INC.
Associated Engineering Consultants
132 Nassau Street, New York 7, N. Y. — 6 Beacon St., Boston 8, Mass.
1405 W. Erie Ave., Philadelphia 40, Pa. — 55 Caroline Rd., Gowanda, N. Y.
Water Supply, Treatment, Distribution—Sewage, Sewage Treatment, Refuse Disposal, Air Pollution, Power Plants, Incinerator Plants. Reports, Plans, Supervision—Laboratory Service

ARE YOU A CITY OFFICIAL?
You will find this Directory a reliable "WHO'S WHO" of consulting engineers who specialize in municipal work.

The American City Professional Service Directory

DAMON & FOSTER
Consulting Civil Engineers and Surveyors

Water Supply, Sewerage, Sewage Disposal, Surveys, Land Subdivision, City and Town Planning, Reports, Design, Supervision.

Sharon Hill — Pennsylvania

DE LEUW, CATHER & COMPANY
Consulting Engineers

Public Transit, Traffic and Parking Problems

Railroads — Subways — Grade Separations — Tunnels
Major Thoroughfares — Power Plants — Expressways — Municipal Works

150 North Wacker Drive, Chicago 6, Ill. — 79 McAllister St., San Francisco 2, Calif.

ALBERT E. DICKENS AND COMPANY

901 16th Street, N.W., Washington 6, D. C.

City and Regional Planning Studies • Economic Surveys • Real Estate Surveys • Industrial Relocation Surveys • Consumer and Shopping Surveys • Market Analyses and Surveys • General Business Consulting Services

OVER 35 YEARS OF APPRAISAL SERVICE

Property Tax Equalization Appraisals

DOANE APPRAISALS

Municipal County Personal Prop.

Doane Appraisal Service, 328 Main, P.O. Box 379, Ames, Iowa

EDWARDS, KELCEY AND BECK
Consulting Engineers

Surveys — Reports — Economic Studies — Transportation, Traffic and Parking Studies — Design — Supervision — Management — Port and Harbor Works — Terminals — Expressways — Highways — Grade Separations — Bridges — Tunnels — Water Supply

3 William Street, Newark 2, N. J.

New York — *Boston* — *Philadelphia*

ELECTRICAL TESTING LABORATORIES, INC.

Electrical and General Testing—Inspections—Research—Certification

2 EAST END AVENUE AT 79th STREET, NEW YORK 21, N. Y.

BUtterfield 8-2600

EWIN ENGINEERING CORPORATION
Engineers—Consultants

Municipal Planning — Highways — Design and Supervision of Municipal Projects — Sewage Systems — Water Systems — Bridges — Port and Harbor Development

P. O. Box 361, Mobile, Alabama

Offices: Washington, D. C. — Cafritz Bldg. — Miami, Fla. — 2514 Coral Way

32 YEARS OF CITY MAPPING EXPERIENCE

FAIRCHILD AERIAL SURVEYS, INC.

Large scale controlled photographic mosaics. Detailed topographic mapping. For all planning and engineering uses.

Los Angeles: 224 East Eleventh Street • New York: 30 Rockefeller Plaza • Chicago: 111 W. Washington Street • Atlanta: 333 Candler Building • Boston: New England Survey Service, Inc., 51 Cornhill • Seattle: Carl M. Berry, P. O. Box 38, Boeing Field.

Established 1913

WALTER H. FLOOD & CO.
CHEMICAL ENGINEERS

INSPECTION AND TESTING OF MATERIALS AND STRUCTURES
STREETS — ROADS — AIRPORTS
BUILDING AND GENERAL ENGINEERING CONSTRUCTION
Resident Inspection—Chemical & Physical Tests—Soil Boring & Investigation—Concrete Core Cutting
SPECIFICATIONS — REPORTS — RESEARCH

6102 S. BLACKSTONE AVENUE — CHICAGO 37, ILL.

TRANSPORTATION PROBLEMS
HIGHWAYS
MUNICIPAL ENGINEERING

THE CLARKESON ENGINEERING COMPANY INCORPORATED

285 Columbus Ave., Boston 16, Mass.
COmmonwealth 6-7720
EXPRESSWAYS — AIRPORTS

C. C. COLLINGS & CO., Inc.
Financial Consultants

Specialists in Direct Obligation, Revenue & Municipal Authority Financing

Fidelity-Philadelphia Trust Bldg.
Philadelphia (9), Penna.

OLIVER COMSTOCK

Consultant, Organization and Procedures
Experienced in City Management and Business Management, Surveys and Reports at Local, State and Federal Levels

1117 Princess Anne Lane
Falls Church, Virginia

"WHO'S WHO"

City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

DAMES & MOORE
Soil Mechanics Engineering

Los Angeles • San Francisco
Portland • Seattle
Salt Lake City • Chicago
New York • Atlanta • London

General Offices, 816 W. Fifth St.
Los Angeles 17, Calif.

S. R. DeBOER & CO.
City Planning Consultants

515 E. Iliff Ave., Denver 10, Colo.

DICKINSON & WHITE
ENGINEERS—SINCE 1909

Design and Supervision of Municipal Improvements — Water Supply & Purifications — Sewerage and Sewage Disposal — Reinforced Concrete and Structures — Reports, Valuations and Appraisals

115 N. Spring St., Little Rock, Ark.

GEORGE F. EMERY
Planning & Zoning Consultant

Comprehensive Community Plans
Special Studies — Reports — Expert Testimony — Housing—Redevelopment Parking

2624 N.E. 24 St., Ft. Lauderdale, Fla.

Bring Your Professional Services to the attention of municipal officials who consult this Directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.

Write us for particulars

THE AMERICAN CITY
470 Fourth Ave., New York 16

The American City Professional Service Directory

Fay, Spofford & Thorndike, Inc.
Engineers
Airports — Bridges — Turnpikes
Port Developments — Water Supply
Drainage — Sewerage
Commercial Buildings
Boston, Massachusetts

Finkbeiner, Pettis & Strout
Carleton S. Finkbeiner C. E. Pettis
Harold K. Strout
Consulting Engineers
Reports, Designs, Supervision
Water Supply, Water Treatment, Sewerage, Sewage Treatment, Wastes Treatment, Valuations & Appraisals.
518 Jefferson Avenue Toledo 4, Ohio

FRIDY - GAUKER - TRUSCOTT & FRIDY
Architects — Engineers
Water Supply & Treatment, Sewers & Waste Disposal, Incineration, Roads, Airports, Power & Lighting, Schools, Private & Municipal Buildings.
Reports, Plans, Supervision
1321 Arch Street, Philadelphia 7, Pa.

EMERY C. FURRER
City Planning, Municipal and Sanitary Engineering, Building Codes and Zoning Ordinances, Airports, Drainage, Flood Control, Industrial Plants, Design of Fixed and Movable Bridges.
111 West Washington Chicago 2, Ill.

GEORGE A. GIESEKE
Consulting Engineers
Municipal Engineering Problems
Surveying, Housing Development
Water Supply, Industrial Wastes
Sewerage, Refuse Incineration
Design
Supervision of Construction
3705 N. Broad St., Phila 40, Pa.

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

GLACE AND GLACE
Consulting Sanitary Engineers
Sewerage, Sewage and Industrial Wastes Treatment
Design, Construction and Supervision of Operation
Laboratory Service
Front at Reas St., Harrisburg, Pa.

GREELEY & HANSEN
Engineers
Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
220 S. State Street, Chicago 4

Frank E. Harley & Associates
Consulting Engineers
Water Works—Sewage—Highway—Municipal Problems
Harley Bldg., 260 Godwin Ave., Wyckoff, N. J.
Garden State Parkway Div., Wayside, N. J.

Ford, Bacon & Davis
Design Construction Engineers *Reports Valuations*
New York • Chicago • Los Angeles

GANNETT FLEMING CORDDRY & CARPENTER, INC.
Engineers
Dams, Water Works, Sewerage, Industrial Wastes & Garbage Disposal, Highways, Bridges & Airports
Traffic & Parking—Appraisals, Investigations and Reports.
HARRISBURG, PENNA.
Pittsburgh, Pa. Daytona Beach, Fla. *Branch Offices* Chesapeake, W. Va. Philadelphia, Pa. Pleasantville, N. J.

Gellert, Griffin, Harrigan & Associates
Designing • Constructing Engineers Consulting • Managing
N. Henry Gellert, *executive partner*
Wayne C. Harrigan, *partner*
DeWitt C. Griffin, *exec. sec'y partner*
Paul A. Williams, *partner*
LYON BUILDING • SEATTLE 4, WASH. • MAin 1080

WHAT IS YOUR WATER PROBLEM?
Write, Wire or Phone:
Geo-Research
Consultants: Geology — Geophysics — Mineralogy
Syracuse 10, N. Y., Phone: 4-6454
A DIVISION OF SYRACUSE UNIVERSITY RESEARCH INSTITUTE

GILBERT ASSOCIATES, INC.
GAI FOUNDED 1906
ENGINEERS AND CONSULTANTS
Water Supply and Purification
Sewage Industrial Waste
Chemical Laboratory
New York READING, PA. Washington

Ft. Lauderdale, Fla.
THE KEY TO CITY TAX EQUALIZATION
Rochester, N. Y.
JOHN J. GOKEY, ASSOCIATES
SCIENTIFIC TAX EQUALIZATION AND EVALUATION PROGRAMS FOR ALL MUNICIPALITIES
RECOGNIZED BY CITIES AND COUNTIES, BROCHURE ON REQUEST
Est. 1923
For Details Write
JOHN J. GOKEY, SRA, 13 Culner Rd., Rochester 4, N. Y.
FORMER CHIEF ASSESSOR TOWN OF IRONDEQUOIT, N. Y.

HOWARD R. GREEN COMPANY *40th Year*
Consulting Engineers
Municipal and Industrial Water Supply and Treatment; Sewerage and Disposal
Airports, Paving, Bridges, Industrial Structures
BEVER BUILDING, CEDAR RAPIDS, IOWA

L. B. GRIFFITH
Consulting Engineer
Research, Reports and Designs on
Sewage and Industrial Waste Treatment.
22 S. EDISON STREET ARLINGTON 4, VA.

GUNITE CONCRETE & CONSTRUCTION COMPANY
Engineers — Cement Gun Specialists — Contractors
LININGS — ENCASING — INSULATING — REPAIRING
FIREPROOFING — RENOVATING — NEW CONSTRUCTION
1301 Woodswether Rd. Kansas City 5, Mo. 2016 West Walnut St. Chicago 12, Ill. 3206 Houston Houston 9, Texas 4261 Olive St. St. Louis 8, Mo.
Milwaukee and Twin Cities—Denver—New Orleans

The American City Professional Service Directory

FREDERIC R. HARRIS, INC. *Consulting Engineers*

Frederick H. Dechant — Edward J. Quirin — Eugene H. Harlow

MUNICIPAL AND INDUSTRIAL DEVELOPMENTS
Sewage and Wastes Disposal
Water Supply — Highways — Bridges — Incinerators
Airports — Flood Control
PORT AND HARBOR WORKS
Designs
Investigations — Appraisals

123 So. Broad Street, Philadelphia 9, Pa.
27 William Street, New York 5, N. Y.

HASKINS, RIDDLE & SHARP
Consulting Engineers
Water—Sewage & Industrial Wastes—Hydraulics
Reports, Design, Supervision of Construction, Appraisals, Valuations, Rate Studies
1009 Baltimore Ave., Kansas City 5, Mo.

HARZA ENGINEERING COMPANY
Consulting Engineers
Calvin V. Davis — Richard D. Harza — E. Montford Fuelk
Hydroelectric Plants and Dams
Transmission Lines
Flood Control, Irrigation
River Basin Development
400 W. Madison Street — Chicago 6, Ill.

HAVENS AND EMERSON
W. L. Havens — A. A. Burger
J. W. Avery — H. H. Moseley
F. S. Palocsay — E. S. Ordway
F. C. Tolles, Consultant
Water, Sewerage, Garbage, Industrial Wastes, Valuations—Laboratories
Leader Bldg., Cleveland 14, O. — Woolworth Bldg., New York 7, N. Y.

HELMSLEY-SPEAR, Inc.
Established 1866
53rd & 54th Floors
Lincoln Building, New York 17, N Y.
An experienced staff of 150 experts in every phase of real and personal property.
For outstanding professional equalization assessment appraisal work call on us for details.

HAZEN AND SAWYER
Engineers
Richard Hazen — Alfred W. Sawyer
Municipal and Industrial Water Supply
Purification and Distribution
Sewage Works and Waste Disposal
Investigations, Design,
Supervision of Construction and Operation
122 East 42nd St. New York 17, N. Y.

THE HINCHMAN CORPORATION
Consulting Engineers
CORROSION CONTROL—Surveys, Reports, Cathodic Protection Designs and Specifications for Above and Under Ground Utilities and Marine Structures.
ELECTRICAL GROUNDING SYSTEMS AND SURVEYS
Francis Palms Bldg. — Detroit 1, Mich.

ANGUS D. HENDERSON
Consulting Engineer
Water Supply and Sanitation
330 Winthrop St., Westbury, N. Y.
210-07 29th Ave., Bayside, N. Y.

HUNNICUTT & ASSOCIATES
VALUATION ENGINEERS
SPECIALISTS IN COUNTY AND MUNICIPAL REVALUATIONS FOR MORE THAN 30 YEARS
41 Fourth St., So., St. Petersburg — 1429 Peachtree St. NE, Atlanta

HENNINGSON, DURHAM & RICHARDSON
Consulting Engineers since 1917 for more than 700 cities and towns.
Water Works, Light and Power, Sewers, Sewage Treatment, Reports, Flood Control, Appraisals, Drainage, Rural Electrification.
2962 Harney St., Omaha 2, Nebraska

MARK HURD AERIAL SURVEYS, INC.
Aerial Photography — Tax Maps
Topographic And Planimetric Maps
230 Oak Grove Street — Minneapolis 3, Minnesota

HILL and HILL
Engineers
Sewage and Waste Disposal, Water Supply and Filtration, Dams, Reservoirs, Tunnels, Airport and Topographic Survey
Home Office: 8 Gibson Street, North East, Pa.

J. L. JACOBS & COMPANY
Public Administration Consultants and Engineers Since 1915
Property Appraisals and Tax Equalization—Finance—Organization—Procedures—Fringe Area Problems—Facilities—Personnel Classification and Pay Plans
53 W. JACKSON BLVD., CHICAGO 4, ILLINOIS
Other Offices; Boston, Los Angeles, Washington, D. C.

YOUR CARD
could be set in this space at reasonable cost
If you are interested, write
THE AMERICAN CITY
470 Fourth Ave., New York 16,
or 2111 Daily News Building
Chicago 6, Ill.

ENGINEERING OFFICE OF CLYDE C. KENNEDY
COMPLETE MUNICIPAL ENGINEERING SERVICE
- WATER SUPPLY
- SEWAGE AND WASTE TREATMENT
- SEWAGE RECLAMATION

CHEMICAL AND BIOLOGICAL LABORATORY
604 Mission Street, San Francisco 5

C. H. HOPER & COMPANY
Utilities Engineers
Electric—Gas—Water—Sewer
Rates • Financial and Economic Analyses • Planning • Feasibility Reports • Valuations • Organization and Management Studies
Denver National Bldg. • Denver 2, Colo.

The Kuljian Corporation
engineers • consultants
construction supervision
Designs • Surveys
Planning
1200 NORTH BROAD STREET, PHILADELPHIA 21, PA.
POWER PLANTS, AIRPORTS and AIRPORT FACILITIES
HIGHWAYS, EXPRESSWAYS,
WATER and SEWAGE WORKS,
FLOOD CONTROL, IRRIGATION
INDUSTRIAL PLANTS

HORNER & SHIFRIN
Consulting Engineers
W. W. Horner — E. E. Bloss
V. C. Lischer
Airports—Hydraulic Engineering
Sewerage—Sewage Treatment
Water Supply — Municipal Engineering— Reports.
Shell Building, St Louis 3, Mo.

The American City Professional Service Directory

Harold Hoskins & Associates
(Successors to Scott & Scott, Inc.)
Consulting Engineers
Sewers and Sewage Treatment
Paving Water Supply Drainage
Bridges Airports Reports
Power Plants Surveys
1630 Que St. Lincoln, Nebr.
720½ 9th St., Greeley, Colorado

ROBERT W. HUNT CO.
Engineers
Inspection — Tests — Consultation
Pipe and Appurtenances; Paving and Engineering Materials; Green and Treated Lumber
175 W. Jackson Blvd., Chicago 4 and all large industrial centers.

Jenkins, Merchant & Nankivil
Consulting Engineers
Municipal Improvements Sewerage
Power Development Water Systems
Traffic Surveys Industrial Plants
Flood Control Recreational Facilities
Airports Investigations and Reports
805 East Miller St. Springfield, Ill.

THE JENNINGS-LAWRENCE CO.
Civil & Municipal Engineers
Water Supply—Treatment—Distribution
Sewerage—Sewage Treatment—Paving
Drainage—Dams Surveys—Mapping
Reports Plans—Supervision
1392 King Ave. Columbus 12, Ohio

JOHNSON & ANDERSON, Inc.
Engineers
Sewerage & Sewage Treatment—Water Supply & Distribution — Bridges — Highways — Municipal Engineering — Flood Control & Drainage. Home Office: Pontiac, Mich. Branch Offices: Flint, Mich.; Centerline, Mich.

JONES, HENRY & WILLIAMS
Consulting Sanitary Engineers
Water Works
Sewerage and Treatment
Waste Disposal
Security Bldg. Toledo 4, Ohio

SANDERS A. KAHN ASSOC.
Real Estate—Planning
Urban economics appraisals, master plans, refinancing, redevelopment, terminals, aviation, shopping centers.
50 East 42nd St.
New York 17, New York
MUrray Hill 7-3363-4

KAISER ENGINEERS
Div. of Henry J. Kaiser Co.
General Engineering Services
Public Works
1924 Broadway, Oakland 12, Cal.
Phone: Twin Oaks 3-4600

JOHN J. KASSNER & CO.
Consulting Engineers
John J. Kassner David Lovine
Preliminary Studies, Designs, Contracts, Specifications, Highways, Expressways, Structures, Drainage, Sewerage, Waterfront, Site Planning, Housing, Parking, Parks.
111 Broadway New York 6, N. Y.

ARTHUR LAZARUS COMPANY
Management Consultants
Seventy Pine Street New York 5, N. Y.
TRANSPORTATION, PUBLIC SAFETY AND SCHOOL ECONOMY

LOCKWOOD, KESSLER & BARTLETT, INC.
Engineers *Surveyors*
Civil Engineering Investigations, Reports and Designs. Supervision of Construction. Cadastral, Geodetic, Topographic and Engineering Surveys. Photogrammetric Engineering and Mapping.
ONE AERIAL WAY SYOSSET, NEW YORK

L. E. LOWRY
Consultant
Fire Alarm Systems — Police Signaling Systems
Surveys — Reports — Recommendations — Plans — Specifications
1235 Ridge Avenue Evanston, Illinois

DeSOTO B. McCABE & ASSOCIATES
Consulting Engineers
Water Supply, Sewerage, Bridges, Highways, Feasibility Reports, Municipal Planning, Advisors to Management
9435 Irving Park Road—Schiller Park (Chicago Suburb), Illinois

McFADZEAN, EVERLY AND ASSOCIATES
PARK PLANNERS — ENGINEERS
Parks — Park-Schools — Golf Courses
Swimming Pools — Zoos — Park & Recreation Surveys
874 GREEN BAY ROAD WINNETKA, ILLINOIS
Phone: Winnetka 6-3720

METCALF & EDDY
Engineers
Water, Sewage, Drainage, Refuse and Industrial Wastes Problems
Airports, Laboratory, Valuations
Statler Building, Boston 16, Mass.

METEOROLOGICAL CONSULTANTS TO INDUSTRY
Irving P. Krick
Meteorological Consultant, Inc.
WEATHER FORECASTS
460 So. Broadway
Denver 9, Colo.
Phone: RA 2-2891
Water Resources
Development Corporation
WEATHER MODIFICATION

MORRISON-MAIERLE, INC.
Consulting Engineers
Streets Bridges Airports Irrigation
Structures Water Supply Sewerage Works Industrial Wastes
910 Helena Avenue Helena, Montana

JOHN M. MUDDEMAN ASSOCIATES
Planning Consultants
STONY BROOK AND SEAFORD, LONG ISLAND, N. Y.
Comprehensive Municipal Planning Programs—Subdivisions—Zoning—Traffic—Master Plans—Airports—Building Codes and General Consulting Service
Tax Maps and Revaluation Surveys—Complete Reports for Capital Budgets and Municipal Finance

The American City Professional Service Directory

NATIONAL POWER RODDING CORPORATION
Specialized Pipe Cleaning Engineers
Complete engineering services for the restoration and maintenance of water and sewer lines for municipalities. *Write for complete details to:*
NATIONAL POWER RODDING CORPORATION
1000 S. Western Ave., Chicago 12, Ill.
Branch Office: 7827 Melrose Ave., Los Angeles 46, Calif.

KEIS & HOLROYD
Consulting Engineers
Formerly Solomon & Keis
Since 1906
Water Supply and Purification, Sewerage and Sewage Treatment, Garbage and Refuse Disposal and Incineration, Industrial Buildings
Troy, N. Y. Ft. Lauderdale, Fla.

JOHN C. NORTON & ASSOCIATES
Consulting Engineers
Water Supply, Sewage Treatment, Airports, Harbors, Municipal Engineering
Masonic Building Traverse City, Michigan

A. C. KIRKWOOD AND ASSOCIATES
Engineers — Consultants
7800 The Paseo
Kansas City 10, Mo.

NUSSBAUMER - CLARKE and VELZY, INC.
CONSULTING ENGINEERS
SEWAGE TREATMENT — WATER SUPPLY — INCINERATION
DRAINAGE — TOWN PLANNING — APPRAISALS
327 Franklin St., Buffalo 2, N. Y. 500 Fifth Ave., New York, N. Y.

MORRIS KNOWLES Inc.
Engineers
Water Supply and Purification, Sewerage and Sewage Disposal Valuations, Laboratory, City Planning.
1312 Park Bldg.
Pittsburgh 22, Pa.

THE H. C. NUTTING COMPANY
Inspecting and Testing Engineers
Water Waste Survey Trunk Main Surveys Water Distribution Studies
Chemical and Physical Testing of Paving and Building Materials—Metals—Pipe Oils, Etc.
4120 Airport Road Cincinnati 26, Ohio

LOUIS J. KROEGER AND ASSOCIATES
Administrative Surveys—Personnel Classification—Salary Plans—Civil Service Testing
25 California St., San Francisco
204 Rowan Bldg., Los Angeles

PALMER AND BAKER, INC.
CONSULTING ENGINEERS — ARCHITECTS — NAVAL ARCHITECTS — MARINE ENGINEERS
Surveys — Reports — Designs — Supervision — Consultation
Transportation and Traffic Problems; Tunnels, Bridges, Highway, Airports; Industrial Buildings; Waterfront and Harbor Structures; Graving and Floating Dry Docks; Vessels, Boats and Floating Equipment. Complete Soils, Materials and Chemical Laboratories
Mobile, Ala. New Orleans, La. Harvey, La.

HAROLD M. LEWIS
Consulting Engineer, City Planner
Municipal & Regional Planning
Analyses of urban problems, zoning master plans, traffic, parking, subdivisions, redevelopment.
Reports—Plans—Ordinances
15 Park Row New York 38, N. Y.

PARSONS, BRINCKERHOFF, HALL & MACDONALD
Engineers
Bridges, Highways, Tunnels, Airports, Subways, Harbor Works, Dams, Canals, Traffic, Parking and Transportation Reports, Power, Industrial Buildings, Housing, Sewerage and Water Supply.
51 Broadway, New York 6, N. Y.

LOCKWOOD GREENE ENGINEERS, INC.
ARCHITECTS—ENGINEERS
Montgomery Building
SPARTANBURG, S. C.
Water Supply, Power Plants, Sewage Disposal, Valuations & Appraisals, Industrial Waste, Industrial Plant Design.

SURVEY — ENGINEERING DESIGN — INSTALLATION and MAINTENANCE of Cathodic Protection Systems
PIPE LINE ANODE CORP. Box 471 Tulsa, Okla.

WM. S. LOZIER CO.
Consulting Engineers
Sewerage, Sewage Disposal
Water Supply, Water Purification
Refuse Disposal
10 Gibbs St., Rochester 4, N. Y.

THE PITOMETER ASSOCIATES, INC.
Engineers
Water Waste Surveys Trunk Main Surveys Water Distribution Studies
Water Measurement and Special Hydraulic Investigations
50 Church Street New York 7, N. Y.

Lublin, McGaughy & Assoc.
Architects and Consulting Engineers
Water supply, sewage disposal, airports, streets, improvements, municipal planning, buildings, recreation facilities, reports and appraisals.
220 W. Freemason St., Norfolk 10, Va.
1001 Connecticut Ave., Washington, D. C.

CLYDE POTTS ASSOCIATES
Weston Gavett Stanley N. Williams
Sewerage and Sewage Disposal — Water Works and Water Supply
Valuations and Appraisals
30 CHURCH STREET NEW YORK 7, N. Y.

MAPS, INCORPORATED
—Air Survey Contractors—
AERIAL PHOTOGRAMMETRIC MAPS, SURVEYS AND STUDIES OF ALL CLASSIFICATIONS—PREPARATION OF SPECIFICATIONS—CONSULTING
Harbor Field—Baltimore 22, Md.

The American City Professional Service Directory

McCLAVE & McCLAVE
Civil and Consulting Engineers
Established 1906
Municipal Problems, Surveys, Reports, Design, Supervision, Industrial Waste, Sewerage and Water Supply
Flood Control, Highways, Land Development
Cliffside Park, New Jersey
Tel. Cliffside 6-4000

RADER ENGINEERING CO.
Airports, Bridges, Roads and Streets, Port Developments, Water Works, Drainage, Sewerage, Sewage Disposal, Transportation, Traffic and Parking Studies
Consultant — Investigations — Reports — Valuations — Designs — Specifications
Supervision of Construction
111 N.E. 2nd Ave., Miami 32, Florida
1025 Connecticut Ave., Washington, D. C.

GEORGE B. MEBUS
Consulting Engineers
Water Supply Sewage Treatment
Industrial Waste Treatment
Northwestern Natl. Bank Bldg., Glenside, Pa.

RAYNOR AERIAL SURVEYS
- Topographic Maps
- Aerial Photography
- Photogrammetric Surveys

GEORGETOWN, CONNECTICUT

Tax Maps •
Surveys •
Controlled Mosaics •

STUART M. MERTZ
Landscape Architect
Planning Consultant
Park and Recreation Areas, School, Hospital and Institution Grounds
Commercial Centers, Subdivisions
Cemeteries, Housing, City Plans, etc.
7966 Benhomme, St. Louis 5, Mo.

ROBERT AND COMPANY ASSOCIATES
Water Supply
Sewage Disposal
Industrial Wastes
Engineering Division
ATLANTA
Incinerators
Power Plants
Valuations

Metropolitan Planners, Inc.
Planning Consultants
Lawrence V. Sheridan
Kenneth L. Schellie
City and County Planning - Zoning - Subdivision and Shopping Center Design - Urban Redevelopment - Airport Zoning - Industrial District Plans - Landscape Architecture
900 Bd. of Trade Bldg., Indianapolis 4, Ind.

RUSSELL and AXON
Consulting Engineers
Civil—Sanitary—Structural—Industrial—Electrical—Rate Investigations
408 Olive Street, St. Louis 2, Mo.
Municipal Airport, Daytona Beach, Fla.

LEONARD MISCALL AND ASSOCIATES
Consultants
Municipal Problems, Planning and Zoning Studies and Reports
111 Parker Pl., Ithaca, New York

CARL M. SEABERG & ASSOCIATES
Consultants & Engineers
MODERN AND ADVANCED ENGINEERING of FIRE ALARM SYSTEMS
POLICE SIGNALING SYSTEMS — Municipal and Industrial — TRAFFIC SIGNAL SYSTEMS
Surveys, Reports, Recommendations, Plans, Specifications
1529 Fifteenth Avenue, Moline, Ill.
Formerly associated with: Western Electric Co., Cicero, Ill.; Harrington Seaberg Corp., Moline, Ill.; Eagle Signal Corp., Moline, Ill.; The Gamewell Co., Newton, Mass.

B. L. Oliver & Company
Municipal Consulting Engineers
Water Systems, Electric Plants, Distribution, Disposal Plants, Sewerage, Paving and Drainage, Gas Systems, Utility Reports, Rates and Appraisals.
Grand Avenue Bank Bldg., Kansas City 8, Missouri

IRBY SEAY COMPANY
CONSULTING ENGINEERS
WATER SUPPLY & TREATMENT — SEWAGE SYSTEMS & TREATMENT
ELECTRICAL — NATURAL GAS
Goodwyn Institute Bldg., MEMPHIS 3, TENNESSEE — Jackson 7-2932

PATZIG TESTING LABORATORIES
Inspection Service
Chemical and Physical Testing of Paving and Building Materials, Metals, Fuels, Oils, Water, etc.
2215 Ingersoll Ave., Des Moines, Ia.

SEELYE STEVENSON VALUE & KNECHT
Consulting Engineers
Airports, Highways, Dams, Bridges, Concrete, Steel, Welding, Foundations, Stadiums, Appraisals, Sewage Disposal, Water Supply and Industrial Plants.
101 Park Avenue, New York 17, N. Y.

BOYD E. PHELPS, INC.
Architects and Engineers
Water Supply and Purification
Sewerage and Sewage Treatment
Power Plants, Buildings, Investigations
Reports, Appraisals, Rate Studies
1006 Washington St., Michigan City, Ind.

SERVIS, VAN DOREN & HAZARD
Engineers
STRUCTURES, BUILDINGS, FOUNDATIONS, SEWERAGE,
WATER SUPPLY, STREETS, HIGHWAYS, AIRPORTS, FLOOD CONTROL,
DRAINAGE, POWER PLANTS, ELECTRICAL DISTRIBUTION
2910 Topeka Boulevard — Phone 4-6603 — Topeka, Kansas

Malcolm Pirnie Engineers
Civil and Sanitary Engineers
Malcolm Pirnie — Ernest W. Whitlock
Robert D. Mitchell — Carl A. Arenander
Malcolm Pirnie, Jr.
Investigations, Reports, Plans
Supervision of Construction and Operations
Appraisals and Rates
25 W. 43rd St. New York 36, N. Y.

BUY all the Bonds you can . . . KEEP all the Bonds you buy
PROTECT YOUR FUTURE — Buy your EXTRA Bonds now!

The American City Professional Service Directory

POLK, POWELL & HENDON
Engineers—Consultants
A. O. Polk Harry H. Hendon
Hugh A. Powell
Water systems, sewers, sewage treatment plants, steam and hydro plants, dams, drainage, industrial, buildings, municipal planning reports, plans, estimates, supervision.
820 Stallings Bldg., Birmingham 3, Ala.

JOHN O. PRESTON
Planning and Zoning Consultant
Advisory service to Airport Officials and to Planning & Zoning Boards
124 S. W. 24th Road, Miami, Fla.

SCHMIDT ENGINEERING CO.
Consulting Engineers
Reports, Designs, Construction Supervision, Heavy Construction Projects, Dams, Hydroelectric, Water and Sewerage Works, Foundation Exploration and Treatment
817 Broad St. Chattanooga, Tenn.

JOSEPH A. SCHUDT AND ASSOCIATES
Civil Engineers—Surveyors
Surveying, Land Planning, Complete Municipal Services Specializing in Subdivision Development
Box 68 Park Forest, Illinois

ALEXANDER POTTER ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.
80 Church Street, New York 7, N. Y.

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

CARL SCHNEIDER
Consulting Engineer
602 Pan American Bldg.
New Orleans 12, La.
Incineration Sanitary Fills
Refuse Collection Sanitation Studies
Reports

LADISLAS SEGOE & ASSOC.
City Planners—Consulting Engineers
Comprehensive City Plans ● Zoning Plans, Ordinances and Expert Testimony ● Traffic, Transit, Transportation Studies ● Housing Surveys ● Urban Redevelopment & Housing Projects.
517 Provident Bank Bldg., Cincinnati 2

PRAEGER-KAVANAGH
Engineers
126 E. 38th St., New York 16, N. Y.

ARTHUR E. ROWE & ASSOCIATES
Municipal Buildings, Swimming Pools, Parking Facilities, Incinerators, Stadia, etc.
3125 Prospect Ave., Cleveland 15, O.

YOUR CARD
could be set in this space at reasonable cost
If you are interested, write
THE AMERICAN CITY
470 Fourth Ave., New York 16, or 2111 Daily News Building Chicago 6, Ill.

I. S. SHATTUCK
City Plans—Land Use, Zoning, Industrial, Residential and other Urban Developments, Subdivision Design.
Traffic and Parking Plans.
P. O. Box 312 Wayzata, Minn.

SMITH AND GILLESPIE
Consulting Engineers
JACKSONVILLE, FLORIDA
An Organization of Experienced Engineers Specializing in Municipal Utilities and Public Works

GEORGE W. SIMONS, JR. AND ASSOCIATES
Planning Consultants and Municipal Engineers
City, County Plans—Zoning—Redevelopment and Housing—Traffic and Parking Studies — Parks — Recreation—Subdivisions—Landscaping.
402 Hildebrandt Bldg., Jacksonville 2, Florida

SNYDER, McLELLAN & WEINBERG
Financial and Engineering Counsellors
Studies-Reports Public Relations — Bond Promotion Surveys — Design Engineering
WATER — SEWERAGE
Cuyahoga Falls, Ohio — *Hillsboro, Indiana* — *Bowling Green, Kentucky*

SINGSTAD & BAILLIE
Consulting Engineers
Ole Singstad David G. Baillie, Jr.
Tunnels, Subways, Highways, Foundations, Parking Garages
Investigation, Reports, Design Specifications, Supervision.
24 State St. New York 4, N. Y.

STANLEY ENGINEERING CO.
Consulting Engineers
327 S. LaSalle St., Chicago 4, Ill. Hershey Bldg., Muscatine, Ia.

J. E. SIRRINE COMPANY
Engineers
Water Supply & Purification
Sewage & Industrial Waste Disposal, Stream Pollution Reports, Utilities, Analysis
Greenville South Carolina

D. B. STEINMAN
Consulting Engineer
Bridges— Expressways—Highways—Viaducts Grade Separations — Structures
Design, Construction, Strengthening, Maintenance, Investigations, Reports, Advisory Service
117 Liberty Street New York 6, N. Y.

SOUTHERN MAPPING & ENGINEERING CO.
Consulting Civil Engineers
Planners and Surveyors; Airports and Highway design; Water Works and Sewage Design; Topography; Tax Mapping Reports and Investigations; Pipe Line Surveys, Acquisition of Right of Way.
216½ Commerce Place, Greensboro, N. C.

ROBERT H. STELLWAGEN
Consulting Engineers
Municipal and Industrial Waste Problems
Collection, Incineration, Salvage, Pumping, Treatment, Testing
629 Buhl Bldg. Detroit 26, Mich.

Bring Your Professional Services
to the attention of municipal officials who consult this Directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Fourth Ave., New York 16

ALDEN E. STILSON & ASSOCIATES, LIMITED
Consulting Engineers
Water Supply—Sewerage—Waste Disposal—Bridges
Highways—Industrial Buildings—Studies—Surveys—Reports
209 SOUTH HIGH STREET COLUMBUS, OHIO

HENRY B. STEEG & ASSOCIATES
Engineers
Sewage Treatment, Water Supply
Garbage and Refuse Disposal
3338 North Illinois Street
P. O. Box 5052, Station A
Indianapolis 8, Ind.

The American City Professional Service Directory

OFFICE of A. CARL STELLING
Site Planning Consultants
Communities, Subdivisions, Housing Projects, Parks and Recreation Areas, Schools and Universities, etc.
127 East 39th St., New York 16, N. Y.
276 Edgewood Ave., W. Englewood, N.J.
110 Whitney Ave., New Haven, Conn.

WHIPP and HARRISON
Consulting Engineers and Land Surveyors
Bridges, Buildings, Sub-Divisions, Boundary Survey, Quantity Surveying, Construction Surveying.
3214 W. Broadway, Hopewell, Va.
Telephone 2019

WHITMAN, REQUARDT and Associates
Engineers — Consultants
Civil—Sanitary—Structural
Mechanical—Electrical
Reports, Plans, Supervision, Appraisals.
1301 St. Paul St., Baltimore 2, Md.

WILEY & WILSON
Consulting Engineers
Municipal Planning, Water Supply, Sewerage, Sewage and Waste Treatment, Incinerators, Streets and Pavements, Airports, Light and Power Plants. Reports—Plans—Supervision.
820 Court St., Lynchburg, Va.
711 West Main St., Richmond 20, Va.

OSCAR SUTERMEISTER
Defense Planning Consultant
FCDA Survival Plan Project Proposals, Research Studies, and Operational Plans—Reduction of Urban Vulnerability—Municipal Protective Construction—Dispersed Development District Planning—Shelters—Fallout Cover.
5923 Johnson Ave., Bethesda 14, Md.

WHITMAN & HOWARD, Inc.
Engineers — Consultants
Municipal Planning, Water Supply, Drainage, Sewerage, Industrial and Municipal Waste Treatment
89 Broad St. Boston, Mass.

WIEDEMAN & SINGLETON
Consulting Engineers
Water Works, Sewers, Sewage Disposal, Appraisals, Valuations, Reports
760 W. Peachtree St., N.W.
Atlanta 3, Ga.

ZONING CONSULTANTS
Experienced
Advisory Expert Testimony Counsel
Stony Brook, Seaford and New York
Robert C. Richter John M. Muddeman
Main offices: Phone:
P. O. Building Stony Brook
Stony Brook, New York 7-0253

HENRY W. TAYLOR
Consulting Engineer
Water Supply, Sewerage
Refuse Disposal, Incineration
Industrial Developments
151 West Merrick Road,
Freeport, N. Y.

TOLEDO TESTING LABORATORY
Inspection and Testing of Paving and Engineering Materials
Sub-Surface Exploration and Soil Tests
1810 North 12th Street Toledo 2, Ohio

TIPPETTS-ABBETT-McCARTHY-STRATTON
Engineers
Ports, Harbors, Flood Control, Irrigation, Power, Dams, Bridges, Tunnels, [illegible] Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.
62 West 47th St., New York, N. Y.

WAINWRIGHT & RAMSEY Inc.
Consultants on Municipal Finance
70 Pine Street New York 5, N. Y.

TOWN PLANNING
IN ALL ITS PHASES
TECHNICAL PLANNING ASSOCIATES, Inc.
104 Audubon St., New Haven 10, Conn.

J. STEPHEN WATKINS
J. S. WATKINS G. R. WATKINS
CONSULTING ENGINEERS
Municipal and Industrial Engineering, Water Supply and Purification, Sewerage and Sewage Treatment, Highways and Structures, Reports, Investigations and Rate Structures.
Main Office: Branch Office:
251 East High Street 901 Hoffman Building
Lexington, Kentucky Louisville, Kentucky

FRED W. TUEMMLER AND ASSOCIATES
Community Planning and Development Consultants
Comprehensive plans, zoning, subdivision regulations; shopping centers; industrial plant location, market analyses; subdivisions, parks, schools.
Telephone— Professional Building
Union 4-5500 Hyattsville, Maryland

ROY WENZLICK & CO.
SURVEYS: Economic, Planning, Housing, Parking, Zoning
APPRAISALS and REVALUATIONS for tax equalization
706 Chestnut Street, St. Louis 1, Mo.—Phone: GArfield 1-0707

UHLMANN & ASSOCIATES
Paul A. Uhlmann H. E. Bonhan
Carl E. Kuck Nye Grant
Consulting Engineers
Sewage and Industrial Waste Treatment
Water Supply and Purification
4954 N. High St. Columbus 14, O.

WIGHT AND COMPANY
Consulting Engineers
Airfields — Pavements — Sewerage — Surveys — Reports — Municipal Improvements
Downers Grove, Ill.

WENZEL & MILLER—ENGINEERS
Consulting Engineers
Developing the Great Northwest
Great Falls Montana

E. T. WILKINS & ASSOCIATES
APPRAISERS ENGINEERS
Municipal and County Tax Reappraisals
Tax Maps Plat Books Aerial Surveys
235 LEADER BLDG., CLEVELAND, OHIO 404 SHARP BLDG., LINCOLN, NEBR.

WESTON & SAMPSON
Consulting Engineers
Hydraulic and Public Health Engineering—Engineering and Laboratory Investigations
Supervision of Purification Plants
14 Beacon St. Boston, Mass.

A. W. WILLIAMS INSPECTION COMPANY
MOBILE, ALABAMA
Established 1921
Inspections - - Tests — Analyses — Sampling
Sub-surface Exploration
Representatives throughout U. S. A. Member A. C. I. L.

Index to Advertisers

MAY 1956

(Names in italics are advertising agencies)

Abbott Coin Counter Co. 279
Bruce Angus Adv. Agency
Abrams Aerial Survey Corp. 289
Acme Visible Records, Inc. 55
E. H. Brown Adv. Agency
Aero Service Corp. 289
Aitkin-Kynett Co.
Air Survey Corp. 289
Alabama Pipe Co. 94
Crawford & Porter, Inc.
Allis-Chalmers Tractor Div. 56, 88, 89, 222
Bert S. Gittins, Adv., Inc.
Alster & Associates, Inc. 269, 289
Lewis Edwin Ryan, Advertising
American Bitumuls & Asphalt Co. 234
John O'Rourke Advertising
American Cast Iron Pipe Co. 246
Robert Luckie & Co.
American Engineering Co. 285
Beatty & Oliver, Inc.
American-Marietta Co. 228
Turner Adv. Agency
American Pamcor, Inc. 154
M. Russell Berger, Inc.
American Telephone & Telegraph .. 4
N. W. Ayer & Son, Inc.
American Vitrified Products Co. .. 61
Griswold-Eshleman Co.
Ammann, Photogrammetric Engineers, Jack 289
Claude Aniol & Associates
Amplex Corp. 169
Walter Wiley, Adv., Inc.
Anchor Post Products, Inc. 231
Vansant, Dugdale & Co., Inc.
Anthracite Equipment Corp. 194
Lynn Organization
Aqua Survey & Instrument Co. .. 247
Perry-Brown, Inc.
Armco Drainage & Metal Prod., Inc. 68
N. W. Ayer & Son, Inc.
Arrow Mfg. Co. 194
Feltner Advertising Service
Asplundh Chipper Co. 48
Associated Surveys 289
Athey Products Corp. 248
Thomson Advertising, Inc.
Atlas Industries, Inc. 259
Ullrich and Brown, Adv.
Aurora Pump Div. 266
Fred A. Hinrichsen Adv. Agency
Automatic Signal Div., Eastern Industries, Inc. 156
Remsen Adv. Agency, Inc.
Automatic Voting Machine Corp. .. 82

Badger Meter Mfg. Co. 190
Klau-Van Pietersom-Dunlap, Inc.
Balke Engineering, Harry 289
Barber-Greene Co. 29
Buchen Co.
Bates Co., Walter 280
Baughman Mfg. Co. 90
Batz-Hodgson-Neuwoehner
Barton & Associates, George W. .. 289
B & B Engineering Corp. 290
Bean Div., John 195
Jaqua Co.
Bell Telephone System 4
N. W. Ayer & Son, Inc.
Bernard Electric Co., Ernest 281
Berry Asphalt Co. of Arkansas .. 244
Goodloe Stuck Adv. Agency
Bethlehem Steel Co. 95
Jones & Brakeley, Inc.
Bettis Corp. 276
Archer & Woodbury
Black & Veatch 290
Blaw-Knox Company 201, 258
Russell T. Gray, Inc.
Brown & Blauvelt 290
Brown Co. 263
J. W. Mathes, Advertising
Brown Engineering Co. 290
Buck, Seifert & Jost 290
Bucyrus-Erie Co. 36
Bert S. Gittins, Adv., Inc.
Buffalo Meter Co. 159
Melvin F. Hall Adv. Agency, Inc.
Bulot, Inc., Francis H. 290
Burger Co., William E. 290
Burgess & Niple 291
Burke, Inc., Ralph H. 291
Burns & McDonnell 291
Burr Chemical Co. 284
Sweet Adv. Agency
Burroughs Corp. 86
Campbell-Ewald Co.
Butler Mfg. Co. 271
Aubrey, Finlay, Marley & Hodgson, Inc.
Byron Jackson Div., Borg-Warner Corp. 287
Ramsey, Brown & Co.

Cast Iron Pipe Research Assn. ..46, 47
H. B. Humphrey, Alley & Richards, Inc.
Cataphote Corp. 170
Richard T. Brandt, Inc.
Caterpillar Tractor Co. 6, 14, 18, 174, 302
N. W. Ayer & Son, Inc.
Chesapeake & Ohio Railway Co. .. 70
Robert Conahay, Inc.
Chicago Bridge & Iron Co. 8
Russell T. Gray, Inc.
Chicago Tank & Bridge Co. 268
Clark Equipment Co. 304
Marsteller, Rickard, Gebhardt & Reed, Inc.
Cleminshaw Co., The J. M. ..272, 291
Climax Engine & Pump Mfg. Co. .. 180
Peterson Advertising Agency
Clow & Sons, James B. 22
Henry M. Hempstead Co.
Cole & Son, Charles W. 291
Cole-Layer-Trumble Co. 291
Cole Mfg. Co., R. D. 82
Burton E. Wyatt & Co.
Columbia-Southern Chemical Corp. 65
Ketchum, MacLeod & Grove, Inc.
Computer-Measurements Corp. .. 200
Harry G. Willis & Assoc.
Connelly, Inc. 282
Illinois Simmonds & Simmonds, Inc.
Consoer Townsend & Associates .. 291
Conveyor Co. 11
Steller, Millar & Lester, Inc.
Cook, John R. 238
Cook Well Strainer Co. 167
Strauchen & McKim
Cooper-Bessemer Corp. 67
Griswold-Eshleman Co.
Cotton, Pierce, Streander, Inc. ... 291
Crouse-Hinds Co. 148
Barlow Adv. Agency, Inc.
Curtis Automotive Devices, Inc. .. 168
Saas and Sogard, Inc.

Damon & Foster 292
Darley & Co., W. S. 275
De Leuw, Cather & Co. 292
Dickens and Co., Albert E. 292
Diebold Inc. 265
Penn & Hamaker, Inc.
Dietz Co., R. E. 192
Barlow Adv. Agency, Inc.
Doane Appraisals 292
Dodge Division, Chrysler Corp. .. 193
Grant Advertising, Inc.
Dotmar Industries, Inc. 267
Tri-State Advertising Co.
Dresser Mfg. Co. 257
Fuller & Smith & Ross, Inc.
Drott Mfg. Co. 96, 97
Aubrey, Finlay, Marley & Hodgson, Inc.
Dual Parking Meter Co. 87
Griswold-Eshleman Co.
Duncan Parking Meter Corp. 71
Perry Hutchinson Co.
Duro-Test Corp. 158
Reid, Decker and Stocki, Inc.

Eagle Signal Corp. 49
L. W. Ramsey Co.
Earth Equipment Corp. 261
McCarty Co.
Eddy Valve Co. 37
Henry M. Hempstead Co.
Edwards, Kelcey & Beck 292
Electrical Testing Laboratories, Inc. 292
Electronic Protection, Inc. 200
Merrill, McEnroe & Associates, Inc.
Ellis & Ford Mfg. Co. 274
Dudgeon, Taylor & Bruske, Inc.
Everson Mfg. Corp. 275
Ewin Engineering Corp. 292
Morris Timbes, Inc.
Expanding Sewer Machine Co. 94

Fairbanks, Morse & Co. 76, 77
Buchen Co.
Fairchild Aerial Surveys, Inc. 205, 292
Clyde D. Graham, Advertising
Felker Mfg. Co. 90
Clyde D. Graham, Advertising
Ferro Enameling Co. 227
Frederick Seid-Ralph Cahn, Advertising
Filotecnica Salmoiraghi, Inc. 272
Fischer & Porter Co. 233
Lenhart Advertising
Fisher-Pierce Co., Inc. 188
Meissner & Culver, Inc.
Fitchburg Engineering Corp. 225
Wildrick & Miller, Inc.
Flexible, Inc. 85
Anderson-McConnell Adv. Agency
Flex-O-Lite Mfg. Corp. 164
Ralph Smith Adv. Agency
Flood & Co., Walter H. 292
Ford, Bacon & Davis 293
Victor A. Smith, Advertising
Ford Division, Ford Motor Co. 140, 141
J. Walter Thompson Co.
Ford Meter Box Co., Inc. 223
Louis E. Wade, Inc.
Four Wheel Drive Auto Co. 73
Brady Co.

Gannett Fleming Corddry & Carpenter, Inc. 293
Gar Wood Industries, Inc. 232
Meldrum & Fewsmith, Inc.
Geerpres Wringer, Inc. 277
Denham & Co.
Gellert, Griffin, Harrigan & Assoc. 293
Frederick E. Baker & Assoc.
General Electric Co. 62, 63, 146, 147
G. M. Basford Co.
General Electric Co. 210
Maxon, Inc.
General Filter Co. 16
Mike Fadell Adv. Agency
Geo-Research 293
Giant Mfg. Co. 283
Gilbert Associates, Inc. 293
Glenfield & Kennedy, Inc. 85
Globe Phone Mfg. Corp. 226
Gokey, John J. 293
Goldak Co. 275
Lionel & Simons, Inc.
Golden-Anderson Valve Specialty Co. 270
Downing, Industrial Adv., Inc.
Grace Sign & Mfg. Co. 84
Whitehead & Sprague, Inc.
Gravely Tractors, Inc. 38
Albert D. Williams, Adv.
Green Co., Edward R. 293
Griffin, L. B. 293
Grimm Stamp & Badge Co. 276
Greenway Adv. Agency
Grote Mfg. Co., Inc. 151
Peck-Heekin
Gunite Concrete & Construction Co. 293
Cecil B. Jolley, Advertising
Gurley, W. & L. E. 215
Fred Wittner Advertising

Hammond Iron Works 288
Sam J. Gallay Co.
Harris, Inc., Frederic E. 294
Harza Engineering Co. 294
Hauck Mfg. Co. 280
Spooner & Kriegel
Hayward Co. 266
Marsteller, Rickard, Gebhardt & Reed, Inc.
Helmsley-Spear, Inc. 294
Equity Advertising Agency
Hercules Powder 83
Fuller & Smith & Ross, Inc.
Hersey Mfg. Co. 60
Hinchman Corp. 294
Holan Corp., J. H. 163
Bayless-Kerr Co.
Holmes Co., Ernest 79
Acme Adv. Agency

Homelite Corp. 254, 255
Sutherland-Abbott
Homestead Valve Mfg. Co. 184
Smith, Taylor & Jenkins, Inc.
Hough Co., Frank G. 75
Ervin R. Abramson, Adv.
Hunnicutt & Associates 294
Hurd Aerial Surveys, Inc., Mark .. 294
Hyde Corp. 260
Hydrauger Corp., Ltd. 85
E. W. Shafer & Co.
International Harvester Co. 43, 96, 97
Aubrey, Finlay, Marley & Hodgson, Inc.
International Salt Co., Inc. 198
Batten, Barton, Durstine & Osborn, Inc.
Iowa Valve Co. 277
Henry M. Hempstead Co.
Jacobs & Co., J. L. 294
Jaeger Machine Co. 281
Maurice Mullay, Co.
Johns-Manville 58
J. Walter Thompson Co.
Johnston Pump Co. 45
Darwin H. Clark Co.
Jones Co., John Wiley 66
Charles L. Rumrill & Co., Inc.
Ka-Mo Tools, Inc. 226
Marvin E. Tench, Adv. Agency
Kennedy, Clyde C. 294
Kennedy Valve Mfg. Co. 243
Mellor Adv. Agency, Inc.
Kerrigan Iron Works, Inc. 186
C. P. Clark, Inc.
Klett Mfg. Co. 84
Koehring Co. 93
Andrews Agency, Inc.
Kohler Co. 244
Roche, Williams & Cleary, Inc.
Kuljian Corp. 294
Roland G. E. Ullman Organization, Inc.
Kwik-Mix Co. 93
Andrews Agency, Inc.
Layne & Bowler, Inc. 33
Rosengarten & Steinke, Inc.
Lazarus Co., Arthur 295
Leadite Co. 280
R. E. Lovekin Corp.
Leopold Co., Inc., F. B. 245
Marsteller, Rickard, Gebhardt & Reed, Inc.
LeTourneau-Westinghouse Co. 216, 217
Andrews Agency, Inc.
Lindsay Co., P. K. 266
Lock Joint Pipe Co. 26
Williams & London, Advertising
Lockwood, Kessler & Bartlett, Inc. 295
Lowry, L. E. 295
Lube-Jack Co. 282
Ludlow Valve Mfg. Co., Inc. 98
W. L. Towne, Advertising Counselor
Lyle Signs, Inc. 267
Alfred Colle Co.
M-B Corp. 74, 220
Ervin R. Abramson, Advertising
M & H Valve & Fittings Co. 230
Silver & Douce Co., Inc.
Magee-Hale Park-O-Meter Co. ... 80
McCormick-Armstrong Co.
Manu-Mine Research & Development Co. 13
R. L. Ingold, Adv. Agency
McCabe & Associates, De Soto B. 295
McCabe-Powers Auto Body Co. ...155
Calvin & Co.
McFadzean, Everly & Associates .. 295
McWane Cast Iron Pipe Co. 249
Silver & Douce Co., Inc.
Mercury Hydraulics, Inc. 241
Glenn Brill Advertising Agency
Metcalf Bros. & Co., Inc. 17
Robert B. Grady Co.
Metcalf & Eddy 295
Meteorological Consultant, Inc. .. 295
Mi-Co Meters 91
Jaap-Orr Co.
Mid-Western Industries, Inc. 194
Associated Adv. Agency, Inc.
Millerbernd Mfg. Co. 152
Graves & Associates
Miniature Train Co. 283
Schram Co.
Miro-Flex Co., Inc. 94
Associated Adv. Agency, Inc.
Mitts & Merrill 285
Price, Tanner & Willox, Inc.
Modern Swimming Pool Co., Inc. .. 255
Zlowe Co.
Moline Malleable Iron Co. 206
Dan Ebberts, Adv. Service
Morrison-Maierle, Inc. 295
Motorola Communications & Electronics, Inc. 78
Kolb & Abraham
Muddeman & Associates, John M. 295
Mueller Co. 72
Ross Advertising
National Clay Pipe Mfrs., Inc. 181
Norman Malone Associates, Inc.
National Power Rodding Corp. ... 296
National Water Main Cleaning Co. 178
Bauer Advertising, Inc.
Neff Laboratories, Inc., J. W. 236
John Philips Adv. Co.
Neptune Meter Co. 100
W. L. Towne, Advertising
Netco Div., Clark-Wilcox Co. 258
Stanley Associates
No-Joint Concrete Pipe Co. 221
Northern Gravel Co. 42
Sweet Adv. Agency
Norton & Associates, John C. 296
Nussbaumer-Clarke & Velzy, Inc. .. 296
Nutting Co., H. C. 296
O'Brien Mfg. Co. 168
L. W. Byrnes & Co.
Olin Mathieson Chemical Corp. .. 69
Doyle, Kitchen & McCormick, Inc.
Oliver Corp. 171
Buchen Co.
Onan & Sons, Inc., D. W. 274
Graves & Associates
Pacific Flush Tank Co. 252
Proebsting, Taylor, Inc.
Palmer & Baker, Inc. 296
Palmer Filter Equipment Co. 168
Parco Products Co. 260
Malsberger-Trexler, Advertising
Parcoa Div., of Johnson Fare Box Co. 278
Fred H. Ebersold, Inc.
Parsons, Brinckerhoff, Hall & Macdonald 296
Parsons Co. 92
Andrews Agency, Inc.
Payne Dean Div. 189
Henry M. Hempstead Co.
Pfaff & Kendall 143
Duncan-Brooks, Inc.
Pipe Line Anode Corp. 296
Paul Locke Adv., Inc.
Pitometer Associates, Inc. 296
Pittsburgh Coke & Chemical Co. .. 41
W. S. Walker, Adv., Inc.
Pittsburgh-Des Moines Steel Co. .. 64
Downing, Industrial Adv., Inc.
Portland Cement Association .. 242
Roche, Williams & Cleary, Inc.
Potts Associates, Clyde 296
Pressure Concrete Co. 273
Price Brothers Co. 179
Yeck & Yeck
Prismo Safety Corp. 160
Michener & O'Connor, Inc.
Rader Engineering Co. 297
Radiator Specialty Co. 270
Bennett-Evans Co.
Raynor Aerial Surveys 297
Recordak Corp. 203
J. Walter Thompson Co.
Reda Pump Co. 214
Watts, Payne Advertising, Inc.
Rensselaer Valve Co. 99
W. L. Towne, Adv. Counselor
Rhodes, Inc., M. H. 303
Gross-Harrison Adv. Agency, Inc.
Robert & Co., Associates 297
Liller, Neal & Battle
Roberts Filter Mfg. Co. 40
Renner Advertisers
Rockwell Mfg. Co. 51, 52, 53, 54
Marsteller, Rickard, Gebhardt & Reed, Inc.
Rockwell Co., W. S. 218
Spooner & Kriegel
Roll-A-Way Filing Systems Co. ... 226
Dudgeon, Taylor & Bruske, Inc.
Ross Valve Mfg. Co., Inc. 229
Russell & Axon 297
Ryerson & Son, Inc., Joseph T. 274
Calkins & Holden, Inc.
Schield Bantam Co. 44
Buchen Co.
Schlueter Mfg. Co. 74
Winius-Brandon Co.
Seaberg & Associates, Carl M. .. 297
Seay Co., Irby 297
Seelye Stevenson Value & Knecht 297
Servis, Van Doren & Hazard 297
Shawnee Mfg. Co., Inc. 84
Carl Lawson Adv. Co.
Sherman Products, Inc. 162
Clark & Bobertz, Inc.
Simplex Valve & Meter Co. 240
Cunningham & Walsh, Inc.
Skinner Co., M. B. 25
Jones & Taylor and Associates
Smith Mfg. Co., A. P. 57
Louis Kniep, Jr. & Associates
Smith-Blair, Inc. 253
E. W. Shafer & Co.
Smith & Co., Inc., Gordon 276
Zimmer-McClaskey Advertising
Smith & Gillespie 298
Snyder, McLellan, Welch & Weinberg 298
Solvay Process Div. 81, 219
Atherton & Currier, Inc.
Sparkler Mfg. Co. 235
Kreicker & Meloan, Inc.
Sparling Meter Co. 273
Spring Load Mfg. Corp. 208
Frederick E. Baker & Associates
Standard Steel Products Mfg. Co. 283
Morrison-Greene-Seymour, Inc.
Standard Steel Works, Inc. 262
James R. Reese Adv. Co.
Stanley Engineering Co. 298
Steinman, D. B. 298
Stellwagen, Robert H. 298
Stewart, Inc., W. H. 281
Stilson & Associates, Ltd., Alden E. 298
Sunflower Industries, Inc. 278
Sweet Co., H. C. 186
Tech Adgency, Inc.
Sylvania Electric Products, Inc. .. 144
J. Walter Thompson Co.
Taller & Cooper, Inc. 204
Harold Marshall Adv. Co., Inc.
Tarrant Mfg. Co. 271
Dave Fris Adv., Inc.
Tennant Co., G. H. 256
Tennessee Corp. 50
Crawford & Porter, Inc.
Texas Co. 2
Time-O-Matic, Inc. 284
Todd Shipyards Corp. 258
Wendell P. Colton Co.
Toledo Testing Laboratory 299
Tractor & Implement Div., Ford Motor Co. 39
Meldrum & Fewsmith, Inc.
Traf-O-Teria System 166
McCormick-Armstrong Co.
Traverse City Iron Works 278
Trinity Valley Iron and Steel Co. .. 268
Parker Willson Advertising
Underwood Corp. 213
Brooke, Smith, French & Dorrance, Inc.
Union Metal Mfg. Co. 139
Griswold-Eshleman Co.
United Metal Cabinet Corp. 239
Pace Adv. Agency, Inc.
United States Pipe & Foundry Co. 31
H. B. Humphrey, Alley & Richards, Inc.
V & E Mfg. Co. 82
Graphic Advertising Service
Vogt Mfg. Co., Inc. 186
Wachs Co., E. H. 241
George W. Hughes Co.
Wagner Iron Works, Inc. 35
A. Herr Adv. Agency
Wainwright & Ramsey, Inc. 299
Wallace & Tiernan 34
Branstater Associates, Inc.
Water Resources Development Corp. 264
Watkins, J. Stephen 299
Weil Pump Co. 199
Jack Bernhard, Advertising
Well Machinery & Supply Co. 224
Rowland-Broiles Co.
Wenzlick & Co., Roy 299
Westinghouse Electric Corp. 197
McCann-Erickson, Inc.
Westinghouse Electric Corp. 172, 173
Fuller & Smith & Ross, Inc.
Wheeler Reflector Co. 182
Ingalls-Miniter Co.
White Mfg. Co. 269
Juhl Advertising Agency
Wight & Co. 299
Wilkins & Associates, E. T. 299
Williams Inspection Co., A. W. ... 299
Willys Motors, Inc. 177
Norman, Craig & Kummel, Inc.
Wood Co., R. D. 250, 251
Gray & Rogers
Worthington Corp. 59
Needham, Louis & Brorby, Inc.
Worthington-Gamon Meter Div. .. 150
Worthington Mower Co. 20
Richard LaFond Adv., Inc.
Zenith Mfg. & Chemical Corp. 279
Harry W. Graff, Inc.

HOW A CAT* D4 TRACTOR SPEEDS WATER AND SEWER WORK

In the whole Caterpillar line of crawler tractors, the D4 probably best fits the needs of the average municipality. It's big enough to do a multitude of jobs well—small enough to give maximum economy and mobility.

The D4 Tractor with No. 4A Bulldozer shown here is owned by the City of Tulsa, Oklahoma. On this particular job the city is laying 16,000 feet of 24-inch water main. All the backfilling is handled neatly and quickly by the Cat-built unit.

There is plenty of work all year round for such a machine. It can be used not only for water and sewer jobs but for stockpiling road materials, feeding the shovel in gravel pits and removing snow in winter.

The D4 is ruggedly built to stand up in tough going. Its dependable 4-cycle, 4-cylinder engine delivers 50 drawbar HP at 1600 RPM. The Caterpillar fuel injection system is simple and foul-free, permitting the use of thrifty, low-cost fuels. Five forward speeds give the tractor a range up to 6.1 MPH.

Final drive, track rollers and idlers are equipped with bellows-type seals, effective in keeping out mud and dust and lengthening work life. Operators like the D4's seat comfort, good visibility and ease of operation and maintenance.

Check over your equipment now. If you're in the market for an all-around tractor-bulldozer unit, give your Caterpillar Dealer a call. He'll be glad to demonstrate a machine on your job and prove with actual figures how it can save the taxpayers' money. He backs the equipment he sells with reliable service and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

MARK-TIME Parking Meters are an *asset* to any community

City officials all over the continent report complete satisfaction with their choice of the Mark-Time *Manual* meter.

Smart, neat appearance

Mark-Time parking meters are an *asset* to *any* street . . . *any* community. Every Mark-Time installation pays for itself and *makes money* for the community.

Trouble-free operation

The Mark-Time *manual mechanism* is definitely superior! It is automatically wound as each parker turns the handle. So called "automatic" meters require the services of clock winders once or twice a week.

Guaranteed collections

The Mark-Time sealed, self-locking coin box is *tamper-proof*—assures your city of 100% of the receipts.

Many factors in the design and rugged construction of the Mark-Time contribute to its lower overall cost and longer life. Consider **MARK-TIME** *first* for your next Parking Meter installation.

M. H. RHODES, INC.
Hartford 6, Connecticut

Manufactured and Sold in Canada by: SPERRY GYROSCOPE OTTAWA Ltd., Ottawa, Ontario, Canada

This 1⅝-yd. Michigan sold itself to Lindenhurst after a full-scale demonstration.

Saving money for the taxpayers:

Why Lindenhurst, N. Y., bought a Michigan Tractor Shovel

To provide materials for highway maintenance, the Village of Lindenhurst, N. Y. recently bought part of a large sand and clay pit. Due to the soft loose footing in the pit, Lindenhurst officials assumed they would need a crawler-type Tractor Shovel to work it. But they also wanted to use the Tractor Shovel at highway repair sites, and this would involve the purchase of a low-boy trailer to move the crawler.

After a competitive demonstration of various makes of crawler and rubber-tired Tractor Shovels, Highway Supt. Henry May was amazed to find that one machine . . . the Michigan . . . could handle both types of work. Says Mr. May: "We bought the rubber-tired Michigan because it handles pit-work as well or better than a crawler—it outperformed all the other machines."

Working the pit

Every day Lindenhurst's 1⅝-yd Michigan drives 14 miles round trip from the Highway Department garage to the sand pit . . . at 27 mph. At the pit, it digs and stockpiles sand . . . mixes oil, gravel and sand into road repair patch, and loads trucks. The Michigan's exclusive power-train (torque converter, power-shift transmission and planetary axles are standard on every model) gives it the power and traction to work fast and effectively in the loose footing. What's more, abrasive sand creates absolutely no maintenance problems for the Michigan's big rubber tires . . . compared to the wear on the hundreds of moving track parts of a crawler.

Road repair jobs

To get from the pit to road repair jobs, Fred May, Lindenhurst's Michigan operator, simply shifts into travel gear and takes off on the road at 27 mph. No truck-trailer or expensive hauling costs involved. On road jobs the Michigan grades, bulldozes, backfills and cleans up.

On-the-job comparison

Before you consider buying any make or type of Tractor Shovel, do what Lindenhurst did: take a look at a Michigan *on-the-job*. The economic advantages of this machine will be obvious once you see it in action . . . fast and mobile, with more useable power and traction than you've ever seen on a rubber-tired Tractor Shovel. Ask your Michigan distributor to demonstrate. *You name the job.*

An illustrated 4-page folder gives complete details on the Lindenhurst operation—write for it.

CLARK® EQUIPMENT

Michigan is a registered trade mark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2495 PIPESTONE ROAD, BENTON HARBOR, MICHIGAN